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WOMEN IN MEDICINE



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AN IBERIAN QUEEN, FROM ELCHE, SPAIN, 4TH CENTURY, B. C.

Note the Cretan ornaments. From the Musée du Louvre.

A History of
**WOMEN
IN MEDICINE**

FROM THE EARLIEST TIMES
TO THE BEGINNING OF THE NINETEENTH CENTURY

By
KATE CAMPBELL HURD-MEAD, M. D.

ILLUSTRATED

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Preface

EMERSON once said that history lives only in its complete records; that its characters must breathe in the atmosphere of their times. Such delineation has not been the good fortune of the women who carried the burden of medical practice down the ages. There are many reasons for this failure. Sometimes the lack of women's names in the records was due simply to the errors of copyists, or to the printers who mistook feminine nouns or adjectives for masculine ones: many a change of an "a" to an "e" or an "us" has made a profound difference in our medical history. When in the eleventh century some careless calligrapher wrote "Trottus" for "Trotula," he, as Osler put it, "deprived a woman of her identity as well as her chair." Hatshepsut, the great woman Pharaoh, was not the first or the last ruler to have her name erased from her own obelisks and temples by a jealous successor.

And we are faced with more than documentary mistakes. With women far more than with men tradition has been prone to garble and distort the original data. But this very fact increases the reliability of those stories of the work of medical women which have persisted down the ages, surviving jealousy, calumny, carelessness and indifference. If any traditions of medical women survived all these handicaps, it is all the more probable that they were based on solid and substantial fact.

But it has fortunately not been necessary to rely on tradition alone for our evidence. There is plenty of authentic documentation attesting the importance of the work of women in medicine; though it is true that these documents were so long overlooked that their resurrection necessitated a long hunt in the great libraries both of Europe and America. We today, who find women in the front ranks as social workers, as hospital consultants, as moral reformers, as peacemakers, are too ready to think of their place and activities as something new. Nothing could be further from the truth. From the remotest times there exists abundant record that in each and all of these fields women were always active and always without ostentation. But to men for countless centuries the stirring events of war rather than those of peace were para-

mount. If histories have been one-sided it has not been so much that the writers of them were deliberately anti-feminist, but rather that they had no real appreciation of the value of the work which women had done, or were doing.

Writing a history of women in medicine is a task to appall any biographer. Walt Whitman said:

When I read the book, the biography famous,
And is this, then, said I, what the author calls a man's life?
And will someone when I am dead and gone write my life?
(As if any man really knew aught of my real life);

Why, even I myself, I often think, know little or nothing of my real life;
Only a few hints—a few diffused, faint clues and indirections
I seek for my own use to trace out here.

In other words, as has been said, all histories, to be of value, must show people in their environment; and, after the lapse of many generations, that environment must often be reconstructed from all sorts of scraps and traces, from bits of recorded history, from the tales told by wandering minstrels, and found in literary traditions. And this reconstruction of history, in so far as it concerns women, will probably have to be done by women; certainly so far most men have seemed incapable of making a true appraisal of the development of women's life and work.

When an historian writes such a *multum in parvo* as Garrison's "History of Medicine," facts, of course, must be verified and statements made accurate. But the historian's work does not stop there: the little explanatory details that make his characters live are as necessary as the basic framework. When, for instance, Garrison says of William Harvey that he was a "little perpetual movement machine"; and that, when calumniated, he "scarcely dared move an eyelid," one can not get, even from the man's contemporary portraits, a more vivid picture of his personality.

Nor is it easy to appraise at its true value the place of any person in the historical perspective. As a class, women seem always to have been too busy to say much about themselves. And sometimes it has seemed that the more worthwhile their deeds the less they said about them. Few women have had Boswells, though many should have had.

Dr. Howard Kelly, in the epitaphologia to his "Dictionary of American Medical Biography" (1928), asks the following questions as the basis for the insertion of an individual biography: What did the physician cited do for others? How did he advance the science and art

of medicine? Did he teach, write, or invent apparatus? Was he a public servant? No better set of questions to appraise the work of women doctors could be devised. Judged by the standards implied by these questions women doctors have, from the beginning of time, shown that their life-work has had this main object: *to serve*. They have been, as a class, generous and sympathetic, born teachers and experimenters, indefatigable workers. In the Osler "Memorial Volume," C. N. B. Camac, calling William Osler the best beloved physician of his time, said: "It is not the toil, the struggle . . . but ideals, principles and deeds that live on as man's immortal self, ever reincarnated in the lives and teachings of his disciples." And these same words can be justly applied to most of the medical women of history.

It was in 1890, at the historical club of Johns Hopkins Hospital, that Osler and Welch and Kelly, enthusiastic as they were over the cultural value of the study of medical history, inspired me to search among the old archives for the story of women's place in the development of medicine. Such a study had never before been seriously undertaken, and such bits of information on the subject as had appeared in medical histories written by men were meagre indeed. The following year, 1891, Dr. Mary Putnam Jacobi published a short but most illuminating account of the medical women of America, and Mrs. Ednah Dow Cheney wrote on the nurses. In 1900, Dr. Mélanie Lipinska, of Paris, published her work on medical women in general. In 1907 a brilliant history of nursing was published by M. Adelaide Nutting and Lavinia L. Dock; and, in 1922, Dr. Louisa Martindale brought out a brief history of outstanding medical women down the ages, a story culminating in the work of the British women doctors, surgeons, radiologists, and pathologists during the Great War. Since that time numerous monographs, autobiographies and reports about or by noted women doctors have been published, but many of them have been in a form not easily accessible to the general public.

From 1890 to 1925 I was so busy with private practice and medico-social work that I could only accumulate materials. In the latter year, however, I gave up practice and settled down at the British Museum Library for two years of research, seeking authentic information in the original documents in Greek, Latin, and other languages, and in many books now out of print, from which might be compiled as true and as complete a story as possible of the work of women in medicine. This material was afterward augmented from manuscripts found in other libraries both here and abroad, by personal visits to most of the countries

ticipation of women in medicine and insisting upon equal medical training with men together with all the titular dignities, opportunities and emoluments attached to such training. The battles fought and won in that connection, within the memories of some of us still living, will be described in the second volume by Dr. Mead to follow this long historical background.

Scanning my own seven decades I recall many happy pictures more or less connected with this epochal medical feminist movement. Let me indulge in a few refreshing memories without limiting them too closely to the vital subject of our memoirs.

In my earlier years, the Blackwell sisters and Marie Zakrzewska constituted a precious heritage of pioneering force. While founding the Kensington Hospital for Women, my personal contacts materialized with the Woman's Medical College and Hospital in Philadelphia, and with Doctors Broomall, Croasdale, Fullerton, and others. How well do I recall Frances Emily White, teacher of physiology, and her controversy with Edward Drinker Cope, the geologist, over the material basis of life. Then there arises the memory of Alice Bennett, working reforms in the Insane Asylum at Norristown, Pennsylvania, and of Caroline Purnell, enthusiastic surgeon and gynecologist to the Woman's Medical College. After coming to Baltimore in 1889, how helpful and stimulating the associations with Sarah Hackett Stevenson, from the Cook County Hospital, Chicago. Nor can I forget the long years and happy associations with Doctor Lilian Welsh of Goucher College and Dr. Mary Sherwood of Baltimore. Nor must I omit my coadjutor, Elizabeth Hurdon, now head of the Marie Curie Hospital of London, England, nor Lillian K. P. Farrar, able radiologist and gynecologist to the Woman's Hospital, New York City. And for what help am I indebted to Dr. Alfreda Withington! It has ever seemed to me that every woman who has earnestly entered into medicine has made a conspicuous reputation; and especially has this been notable in the Spanish-American and the Great War.

Among the women leaders in medicine have been large numbers entering the mission fields in Asia, India and Africa. My Chinese friend, Doctor Mary Stone of Shanghai, has been particularly outstanding in her beneficent services to her country. In India one thinks at once of Anna S. Kugler, Mary Baer, and the preeminent Ida Scudder of Vellore; in north India, Dame of the Realm, Edith Brown, has in her long years of service built up a monumental hospital and training school for native nurses and midwives.

What a volume could be written of medical women in England! My thought reverts to the warm friendship and happy associations with that remarkable woman, Dame Mary Scharlieb, Dean of the London School of Medicine for Women, a truly great surgeon and publicist, noted for her work in India and her writings as well as her work during the Great War. Dr. Mead's second volume will include these women and many more.

My own deep interest has found its substantial objective and expression for the last twenty years in collecting important works connected with the modern advancement of women into their new social and political relations and in forming a library of some six hundred volumes now deposited in the Welch Medical Library, in a room dedicated to the Nursing School of the Johns Hopkins Hospital.

No work, therefore, could be more opportune than these volumes by Doctor Kate Campbell Hurd-Mead. After so prolonged a struggle, much has been accomplished looking forward towards the *terminus ad quem* of so many centuries. But wisdom from past experience dictates caution and suggests that there still remain greater conquests for womanhood in the medical-social-moral realm so urgently calling for renovation and purification!

HOWARD A. KELLY

Baltimore, June, 1937

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Chapter I

Medical Women In Ancient Times

I. WOMEN IN PRIMITIVE MEDICINE

IT is a long time since enlightened people have believed that Eve was made from a rib of Adam, but not so long since Eve determined to be independent of Adam and to assume certain roles congenial to her mentality. The belief that she was born with two hundred million ovules to provide for all future generations has also been discarded along with many another outworn theological dogma.

It is not, however, seriously doubted that males and females differ in certain protoplasmic cells which are capable of almost infinite proliferation and specialization, and that this diversification produces different talents in both sexes. From the days of our little tarsial ancestor, neither squirrel nor monkey, handwork acquired a new significance and became coördinated with mental development; and after many thousands of years there was created a human mother with skill in using her hands and her brain for the alleviation of the suffering not only in her own family but among her neighbors. With the development of sympathy and altruism in both men and women there arose a religious instinct which peopled the air round about with good and bad spirits; and from this it was but a step to priests and priestesses who could propitiate the bad gods and gain the favors of the good gods in the sea and air and trees and rocks. Man, strong and active, became the muscular hunter of food, while woman busied herself near her home with the care of the helpless, and with the preparation of clothing and food. The evolution of mankind has been deduced from anthropological studies of aborigines in many lands, who are still living like the cannibals of the stone age, still worshipping natural objects, still believing in demons, eating the hearts of their enemies as well as of wild beasts, bathing their own heads in the blood and brains of the slain, and sprinkling their doorposts with blood to cure their children from unseen

but very real pain. But even in the twentieth century, among remote peoples, as in past ages, women are the ones who tend women in labor, gather herbs and mix remedies for easing pain, suck a sore spot until it bleeds and shout the incantations for exorcising its demon. Medicine men seem necessary only when a louder noise is needed to scatter demons, or when greater strength than that of medicine women is indispensable for treating a patient.

Although many thousands of years were required to evolve deities with human personality from natural objects, or animals, or from tales of extraordinary men and women of earlier times, it could not have taken a mother long to learn when her crying baby needed something more than food, and that what she could neither see, touch, nor hear was more to be dreaded than anything human. The silence and stillness of death must have been much more mysterious to her than even to us. Any great animal, any bad dream, any overwhelming phenomenon of nature such as thunder, an earthquake, a flood or drought, led her to seek protection for herself and her child behind some rock or tree, or in a dimly lighted cave, where the beating of her own heart must have seemed like some spirit companion to quiet her fears. As language and picture writing developed, signs and emblems symbolized the actual gods; finally a statue came to represent a deity in the form of a beast or a heroic king; and the larger the effigy the greater was its power. Such being the case, it is easy to understand why goddesses were as necessary as gods, since a world or a heaven would be unthinkable without wives and mothers. Thus earthly mothers came to be incarnated as goddesses of healing.

Payment for their services these superhuman beings demanded in the form of sacrifices such as food or flowers, or burnt offerings, the ashes of which might float down stream to an unknown sea god, or the odors delight some god in the air. Gradually, in imagination, these gods and goddesses became more human; so that, even if at the outset they had taken the form of lions or elephants or bulls, in the course of time visions of dead ancestors also became very real, until the whole air was full of spirits whose voices were heard in the rustling of the leaves, the murmuring of the waves, or the raging of the storm. What could be more natural than for women to worship these spirits while watching by a wounded husband, a dying friend, or a mother in labor?

Sir Arthur Evans¹ has said that the rites by which medicine men of

¹ "The Mycenaean Tree and Pillar Cult," 1901, p. 21.

primitive races the world over are able to shut up gods or spirits in a material object show how easily the idea of attracting or compelling such spiritual occupation must have arisen. As proof they placed rude stone monuments over graves to be places of indwelling for the spirits of the occupants of the tombs or of their followers and slaves before whom offerings of food and drink were invitingly arranged.

Although it is impossible for us to imagine ourselves roaming with the cave men after the long glacial ages, watching and wondering about the birth of their babies, or about the hatching of eggs, the flight of birds, the raging of the tempest, we are still awed by such phenomena as earthquakes, eclipses, and floods. Many intelligent people still visit clairvoyants for interpretations of dreams; and few physicians would willingly separate religion from medicine in their practice and depend entirely upon themselves or their drugs for healing their patients. It is, therefore, small wonder that in the South Sea Islands, where long ago Roman Catholic missionaries taught the natives the religion of Christ, the cross is today worshipped as "mother" among the natives, whose healers, bone-setters, midwives, and pediatricists are always women.

It has frequently been said that there is little difference in the medicine of aboriginal peoples anywhere. The ancient Aztecs, other American Indians, the inhabitants of some of the islands of the Pacific, and the natives of African jungles always employed women healers, who worked by manipulations or hot drinks or baths or by other methods to exorcise evil spirits. Among these peoples the conditions of life were like those in Greece and Sumeria and Egypt in the stone and bronze ages. In case of intense headache flint chisels and stick drills were used for opening the skull and drawing out the demon. Hot stones checked bleeding, and stone knives opened abscesses. The surgical instruments found in Pompeii and in ancient graves all over the world are much the same in shape: bronze pincers and probes, stone lancets, bone needles, animal sutures, bronze dilators, and traction forceps—such were the instruments used in Egypt by the wife of Moses, and in Greece by the women of Homer's day, who were surgeons as well as midwives and general healers of the sick. Among the people in the remote country places of Egypt and Greece agricultural and medical methods today differ very little from those of their remote ancestors; and medical traditions are handed down from mother to daughter much as they were in the time of the Trojan wars.

Mary McKibbin Harper¹ tells us that many of the California Indians still use the old incantations and medicine dances. A patient may be taken by the medicine woman to a lonely place in the woods where she is given a sweat and a pommelling, and then the disease is sucked from her mouth and placed in a basket to be taken home. According to the psychology of these Indians, pain is visualized by color and length, and though the medicine women have no scientific ideas as to the treatment of pain the medicine men have even less desire to be helpful. Schoolcraft² tells us that when the Indian women are about to be confined they go off alone and deliver themselves beside a pool of water, if possible, or, like Esquimau women, under some improvised shelter, or in a wayside ditch like the mother of Virgil; but, if the birth is delayed, native women are sometimes called to manipulate the exit of the baby. There is, however, less scientific care of the aboriginal patient than was taught by Hippocrates in Greece more than two thousand years ago.

We find among all the constantly dwindling aborigines of the world the same crude religious beliefs that primitive humanity had. Women are still considered the natural healers, the only obstetricians, the bone-setters, the gatherers of medicinal herbs; and as priestesses of their gods, and representatives of their goddesses, they are, if successful, almost adored. Why, in the process of evolution and education during historic times, women as physicians became subordinate to men and fell from this high estate it is difficult to say; but nevertheless it will be seen that, whether conspicuously in the public eye or not, women have continued to train themselves in all possible ways down the centuries for the relief of their suffering friends and neighbors as well as of their own families. Possibly among the chromosomes of women there is one denoting excessive self-effacement and timidity! Periodically in the past medical women have been brought out of obscurity into the public eye; but these waves seem to have occurred at times of great economic distress, and to have been followed by long subsidences.

However this may be, we can not believe that the mere study of scholastic philosophy and of astrology or even of the *Seven Liberal Arts*, geometry, logic, music, et cetera, could have made a better doctor of a monk than practical bedside study of a patient made of women. While

¹ Harper, M. McK., *Med. Woman's Jour.*, 1928, p. 286.

² "Personal Memoirs of a Residence of Thirty Years With the Indian Tribes," 1851.

priests were being paid for praying, the medical women and priestesses were massaging painful joints, trying patiently to ease the pains of childbirth, washing the sores of lepers, bleeding and cupping, setting bones, and gathering well-known remedies for stomach ache.

In every part of the world there was a goddess to be sought in time of sickness, whether she took the form of a serpent, a cow, or a lioness, or became Mary, the Mother of Jesus. Among the Aztecs, the deity of healing took the form of a serpent and her statue was painted with serpent's blood. At her festival eight live snakes were swallowed by her devotees, and ritualistic dances were performed in which snake symbols were prominent. It is interesting to note that the snake has always been associated with the gods of healing, whether among the American Indians, or the early Greeks, or the rebellious Hebrews in the time of Moses. Apollo's wand and modern medical insignia have coiled serpents on the staff—Aesculapius and Hygeia were never seen without such a wand.

But even where serpents were worshipped as deities of healing there were many other goddesses to whom altars were raised for the relief of physical suffering, as well as for a cure of sterility, the bane of women in all ages. Among the ancient Celts, for example, there were several female divinities of fertility and health. Troublesome questions of law and religion might be submitted to learned men, but medical questions were for priestesses. The gods and goddesses to whom hot springs and sacred herbs were dedicated were equal in knowledge and wisdom. Sirona and Sul, male and female, were the chief healers, but Brigit, the "shining one," like the lioness-headed goddess of Egypt, was the special goddess of fire and fertility. Fires burned continually on the altars of these divinities and much of the folk lore of Ireland, Wales, and ancient Gaul is founded on the imagination of these ancient Celts and their so-called Druid religion. One of the queens of Ireland, Macha of the golden hair, was a priestess of this cult. She is said to have founded a hospital in the year 600 B. C., which was used for six hundred years. The sole document in the Irish language ascribed to St. Patrick is a hymn in which he invokes the Trinity and all the powers of Nature against the enchantments of these mythical "Druid" priestesses because they refused to accept the Christian religion.

As to the beginnings of medical teaching within historic times authorities differ widely. Formerly it was thought that the Minoan civilization in the Greek archipelago, perhaps four thousand years ago,

was the first in which any scientific investigations were made as to medical treatment or diagnosis, but now the date is being pushed far back into the hazy past of the Sumerians, among whom women were considered honorable healers at least six thousand years ago, and from whom new theories of disease were carried by the merchants, through commerce, to the Phoenicians, Egyptians, and Greeks, as we shall soon learn. It is said that as early as 1500 B. C. there were women students at the medical school of Heliopolis, in Egypt.¹

On the other hand, it has been held by certain scholars that India was the cradle of medicine, and that the Greek Hippocrates studied there and learned how to perform surgical operations, including laparatomies, Caesarian sections, trephining, and even how to make inoculations for smallpox. Neuburger² says that the Hindus understood the use of seven hundred drugs as well as rules for diet and medicinal baths, the value of exercise, etc. Benares was the center of the medical cult, and trained physicians were priests as well as the guardians of the sick. After India came under the power of Asoka, during the third century B. C., it was forced to adopt the Buddhist religion in which social service was a cardinal principle. Hospitals for the poor and the sick were built in every town, and young men and maidens were taught how to care for the needy and urged to devote their lives with zeal to medical charity. Asoka published an edict, which may be read today on a rock at Gujerat, commanding the establishment of hospitals throughout his vast kingdom. Some of these were seen by travellers a thousand years later, and the foundations of a few of those in Ceylon are still easily traced. At Anaradhapura, for instance, is the substructure of a hospital similar in design to the temples of Aesculapius at Epidaurus in the Peloponnesus, and at Hadrian's Villa, at Tivoli. It is probable that even the great Alexander, while introducing Greek plastic art into India, borrowed from the Buddhists some of their ideas as to the art of medicine, since we know that both he and his learned mother were interested in medical work.³

¹ Burdett, H. C., "Hospitals and Asylums of the World," 1893.

² "History of Medicine," 1910, vol. I, p. 97.

³ Sarton, G., "Introduction to the History of Science," 1927, vol. I, p. 76, quotes from the ancient Vedas that Susruta and Atreya were among the most ancient professors at Benares, in the heart of India, in the 6th century B. C. Buddhist tradition tells us that Susruta was a surgeon and that he wrote a text book on operations and instruments as well as remedies for disease. This was perhaps two hundred years before Greek medicine became established.

Further east we find that the Chinese and Siamese very early learned what they knew of medicine from the Brahmins. They employed women doctors in their courts to attend hospital patients free of charge, and such women were regarded as highly as any men of the kingdom. Burdett and others tell us that, by 1000 B. C., the Chinese were more advanced in civilization than any other nation of the known world. Their women were not only midwives and gatherers of herbs but surgeons and students of medical lore. Like the men doctors they were dependent upon tradition for their methods of treatment, although they were skilled in making anatomical dissections of the human body, not merely of the pig. Later, however, the Chinese, like the modern Hindus, Arabs, and Turks, lazily discarded the logic of their medicine, and allowed their doctors to take up any corrupt practice they chose and to foster the exorcism of devils with noise, nauseating drugs, needles and moxas, even forgetting their old customs of vaccination, clean surgery and helpful herbs. Until the coming of the Christian missionaries in the nineteenth century, women in China were considered as household fixtures not only hampered by ancient tradition, but incapable of using their brains or their hands in any public intellectual work. The period between the great days of Confucius and Lao-tse, in the fifth and sixth centuries B. C., and our own is a long and dreary one, in which theories of the sacredness of the souls of Chinese ancestors, and the mysticism and fatalism of Taoism, almost indefinitely postponed the revival of learning. Buddha, 560-477 B. C., with his doctrines of love and reincarnation modified Chinese thought somewhat further, whereas very little attention was paid to the book on anatomy and physiology written by the Yellow Emperor, Huang Ti.¹ The Chinese mind was set on philosophy. Women fell behind the men in medical study, and even in obstetrics they bungled fearfully.

Until the nineteenth century conditions in Siam and Japan were no better than in China; but in the former countries modern methods of education were somewhat more quickly adopted. In remote parts of all the Far East, however, many old customs still prevail; they drink blood to cure leprosy and eat blood-bread to cure consumption. Only gradually are they realizing, in villages where malaria has always been a curse, that prayers and prickings are less beneficial than mosquito extermination and the large doses of quinine brought in by the western doctors.

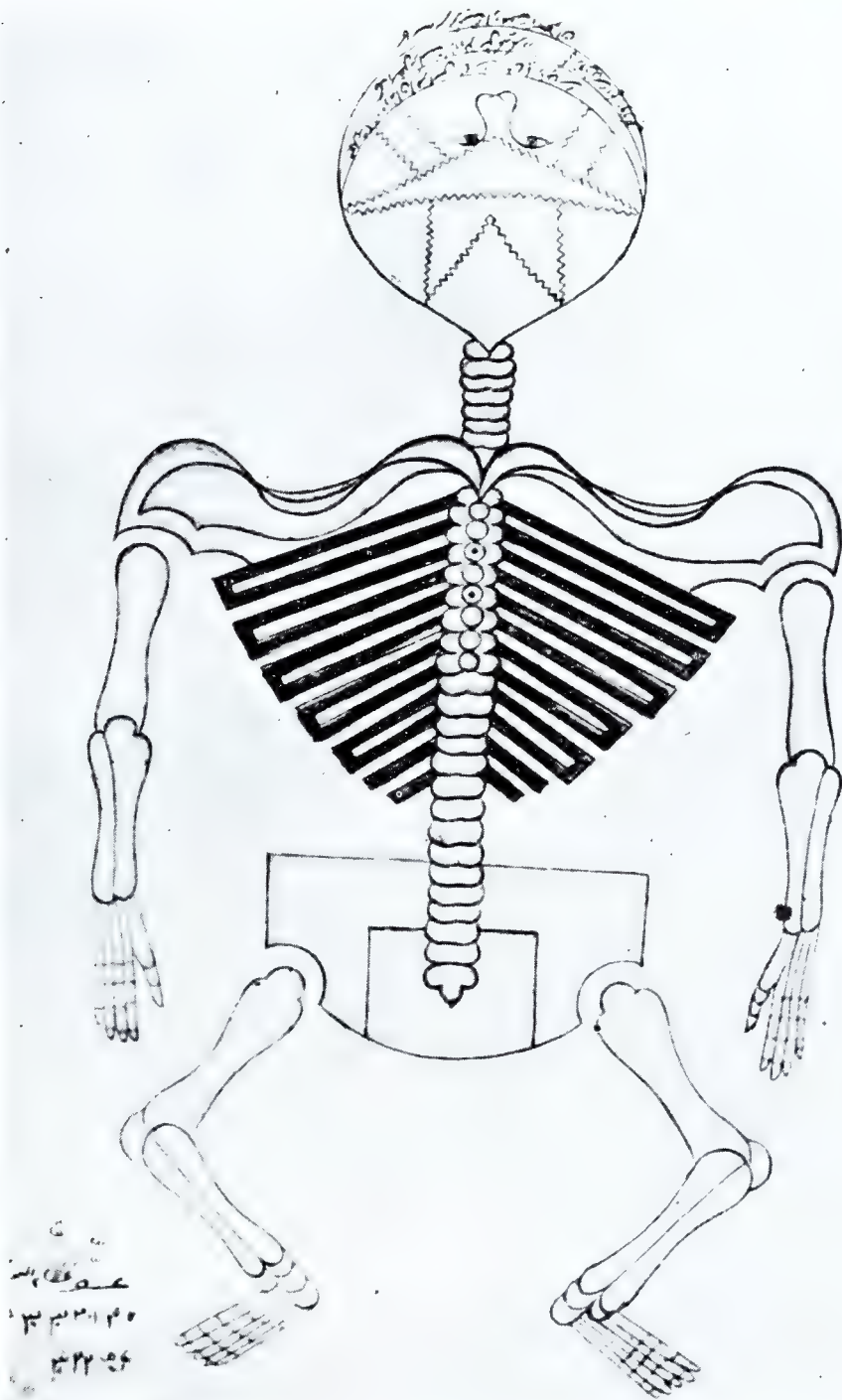
¹ Sarton, G., *op. cit.*, p. 122.

Among the Persians of the centuries before Christ there were herb doctors, knife doctors, and word doctors, a convenient classification even today. Among their learned people, about 800 B. C., there was a famous queen Semiramis. She is claimed also by the Assyrians, for she ruled wisely and well, "a dove in the closet, an eagle in the field." Her subjects, women as well as men, were urged to study whatever was taught at coeducational schools, and some of them went to Egypt to study medicine at Saïs or Heliopolis. They worshipped fire and earth, the sun and water. They built their temples near clear streams, or pools, or springs, and of their thirteen divinities five were women. Ormuzd was the god of medicine, and he taught his disciples everything worth while for mortals to know. Herodotus and Hippocrates tell us that the Persians were great gymnasts, loved perfumes and hot baths, and were temperate in their diet. Their chief goddess was Immortality, and, like Ormuzd, she also taught medicine to her pupils. She had five methods of treatment, by words (law), surgery, plants, texts, and righteousness. Like other divinities, she lived in trees, charms, water, fire, stones, the moon, and stars. Adisina, a wind goddess, could blow away sickness, and Agastya could heal many diseases with medicines.¹ One goddess of the water was able to purify the procreative organs and bring easy delivery to the mother and provide milk for the baby. Another was the giver of numerous offspring. All of these goddesses were prototypes of mortals.

Whether, among the Persians, women doctors commanded the great fees such as were paid by Darius, the King, to the man who cured his dislocated ankle (a bowl of gold coins from every wife in the harem) we do not know; but probably the woman who lanced the abscessed breast of Queen Atossa was not less liberally rewarded. And we cannot believe that the women who attended the queen in her confinements, or saved her from the miscarriages resulting from the ergot poisoning then common, were forgotten in the distribution of gifts. It is said in the *Zendavesta* of the Parsees that in 400 B. C. there was a terrible epidemic of poisoning from the ergot of rye when every woman miscarried "from noxious gases that cause pregnant women to drop the fruit of their womb and die in childbed."

There is an old Persian Romance, *Sydrac and Boctus*, which deals with medical and other sciences, in the form of a dialogue between a certain king of the Bactrians named Boctus, who ruled over a large part of the country between Persia and India, and a philosopher and astrologer

¹ Baas, J. H., "*Grundriss der Geschichte der Medicin*," 1876, p. 30.



A MEDIAEVAL PERSIAN ANATOMICAL DRAWING.

(This was copied repeatedly, by Mansur and others, until as late as the 17th Century.)

named Sydrac, a "descendant of Japhet, 842 years after Noah's flood."¹ Translated into French this story was called "*Le liure de la fontaine de toutes sciences.*" Its series of questions and answers were taken from Pythagoras and Aristotle but given to Sydrac "by divine wisdom." Eventually, as the book was often translated and retranslated through the centuries, the king was converted to Christianity, but what interests us is the description of the human uterus as it was taught six hundred years before Christ in the East. Sydrac tells Boctus (in the English translation of the late 15th century):

.... the wombe
 If thatt thou understonde can
 Hath VII chambrez and no moo,
 And eche is departyd other fro,
 And eche may have in eche thoo
 A childe. And with the sevens goo.
 The wombe.

The printed poem begins with the familiar lines, "I am light as any roe to praise women where that I go," usually thought to have been written by St. Bernard of Cluny, who also wrote many beautiful hymns.

Unfortunately, of the Scythians, or of the fabulous Amazon women, barbaric tribes living between Persia and Greece in the regions to the east and north of the Black Sea, neither Herodotus nor Hippocrates left many records. We simply know that the state of their civilization was not unlike that of the Laplanders today, although they were by no means phlegmatic or stupid, for their women were the bravest of warriors; and since men were merely tolerated once a year for the sake of perpetuating the race, all medical and civic duties fell to women. The queens of the Amazons are known traditionally as Penthesilea and Antiope and Hippolyte. They were said to have fought with, or against, Theseus and Achilles. Whatever may be the truth about these magnificent women we are glad that the sculptors of Greece have given us their ideas of such superb female figures as we see in high relief on the marble temple at Bassae, in the Peloponnesus, and on the tomb of Mausolus of Caria. The latter were placed there by Artemisia, his wife, who was, incidentally, one of the most learned of Greeks—a woman who knew all the medicinal herbs of her country and named some of the best.

However intelligent these peoples of the East may have been before the Christian era, they became degenerate as time went on, either from wars and pestilences, or from the aridity of their lands due to the cutting

¹ Ward, H. L. D., "Catalogue of Romances in the British Museum," 1883, vol. I, pp. 1-79; Book IV, pp. 60-79; Harl. MS. 4294, on paper, late XV century.

down of the forests and the silting of the rivers. Their educational institutions were closed from lack of pupils or of teachers; and their cultural habits became slovenly until only sterile traditions were left. Eventually, as Mohammedans or Christians, they began life anew, as we shall find in other chapters; but where a religion of fatalism, like that of the Moslems, rules the life of a nation its people sink into intellectual lethargy.

To sum up: from the second to the fourth millenniums before Christ medical knowledge among the peoples of Mesopotamia, Egypt, and Greece was substantially alike. In general scholars now believe that the Sumerians, on the banks of the Tigris and Euphrates, were the first to evolve the theory of the personification of demons of disease, with the physician as seer, astrologer, interpreter of dreams, and general ambassador of the gods.

In recent years excavations in the valleys of these rivers have brought to light evidences of an extraordinarily high degree of civilization existing there as far back as six thousand years ago. Jewelry, gold ornaments, pottery, and ivory carvings, as well as elaborate household furniture, show that their considerable commerce was with the nations to the east rather than to the west. From these carvings it appears that many of their medical deities were female; and that, two thousand years before the days of Abraham, the Sumerians and Babylonians built great towers and temples of brick, and understood sanitation, the value of baths and of sunlight. In the grave of Queen Shubad of Ur, 3500 B. C., there were buried not only food for her journey, but prescriptions for stopping pain, written on little bricks, and surgical instruments of flint and bronze, in addition to her toilet articles, and charms and amulets against the demons of disease.

The Assyrians had thousands of gods; scholars have found about four thousand in Ur, Nineveh, and Babylon. They also worshipped the sun, moon, and stars, and trees, and pillars. They were awed by all supernatural phenomena, but their priests could appease individual gods provided they did not happen to be too obstinate. Their philosophy, however, was fatalistic and comforting. The great Assyrian goddess of medicine was Ishtar, or Mummu, the mother god. Gula, the goddess of death and resurrection, was frequently called the "chief physician."¹ Ea, the fish god, was a powerful medical god who dwelt near the sea coast. He carried a little bag of rancid butter for salve, and a pine cone

¹ Langdon, S., "Enc. Brit.," 14th ed., vol. 2, p. 858.

for medicine. Like the queen, he also had flint and bronze knives, razors, pincers, probes and needles of bone and ivory, and cautery stones for stopping bleeding. Neither Baal nor Nebo was of so much help in sickness as was Ea with the help of his female colleagues, Gula and Ishtar. The latter—often called the weeping goddess, because of her sympathy for suffering—was the goddess of love, childbirth, general healing, and especially of woman's diseases, as well as of war. She was thus as important in Assyria as Minerva Medica was in Greece. Unfortunately, at a later time wild and immoral orgies were associated with her worship, but this is not uncommon when nations become degenerate.

To Gula, on the other hand, there was imputed nothing lewd. "The great physician" is depicted seated on a gold throne, wearing a long skirted dress trimmed with fringe. She sometimes has a crown, sometimes merely a wreath of plaited hair above her brows, but, like the Greek gods of medicine, she has in her hand a wand. In bas-reliefs we see processions of priests and priestesses coming to her with petitions from their patients, and sometimes the suppliants wear the masks of fierce beasts to denote the demon of disease. Gula became associated with Tammuz, the god of death and resurrection; and when the great king Assurbanipal was reigning, in the seventh century before Christ, he sent to Gula to implore her to cure his little son "from some insect-borne disease." Litanies were sung in her temples to celebrate her cures, for even in Babylonia advertising in certain ways was worth while; but, if she failed to cure her patients, it required the intercession of a thousand lesser gods to protect the sufferer from the seven devils, half man and half animal, with the heads of lions, rams, birds or serpents which brought diseases.

Lay men and women, singers, magicians, diviners, and psalmists sometimes got the ear of Gula against the female demon Lamashtu, who plagued women in childbirth. Sometimes Gula told the attendants to rub the patient with salt, dough, water, or herbs, to serve as an atonement in absorbing the disease. Sometimes she ordered vegetable remedies or certain incantations, and sometimes she prescribed antidotes for poisons, of which she knew a long list. She understood the symptoms of all diseases caused by "the worm" and taught them to her devotees along with lessons in divination by the liver of sheep, and the laws for the interpretation of dreams.

From the great library of Assurbanipal, dating more than 600 years B. C., have been recovered some 800 prescriptions on clay biscuit-shaped pads. They give the treatment for sore eyes, sleeplessness, skin diseases,

and many other maladies. Amulets have been found shaped like a barrel or cylinder or the head of a ram, such as were worn centuries earlier by Queen Shubad; and on these amulets, inscribed in almost microscopic letters, are prayers for safe confinement and easy delivery. Several abdominal bands such as were worn by pregnant women have also come to light telling the name of the owner, as for example: "My name is Adad, the favorite of Bel"; she prays for pity because of her unblemished life. Near the foundations of the temples of Ishtar have been recovered many finger rings, beads, charms, children's amulets, and ornaments once worn as prophylactics against sickness; and these contain the name of the special god or goddess who best understood the trouble, and a prescription for its cure.

A specimen of these prescriptions, probably dating as early as Abraham or earlier, may be of interest as showing the fashion in ancient remedies. "If a man's eyes are affected with dryness, he shall rub an onion, drink it in beer, and apply oil to his eyes." Or, castor oil cooked in beer is to be poured into the eye, or a hot antimony needle is inserted into the cornea to cure an inflammation. Pine cone gum was used as a lotion; orpiment, made of gold and the yellow sulphide of arsenic, was common; and sometimes the arsenic was cooked in a curd made of harlot's milk mixed with lizard's dung. For diseases of the head the Sumerians used various ointments and lotions; and for headaches there were prescriptions for cold lotions containing balsams and hyoscyamus. For the nose there was cedar oil and myrrh; for lice and itch, sulphur and cedar oil; for scabies, millet seeds in dry dove's dung; for dyeing the hair black there was a preparation of galls mixed with certain parts of the body of a snake and a few insects dissolved in oil of cypress. To these must be added the proper legend praying for the favor of the particular god or goddess¹, such as this: "O clear eye, O doubly clear eye, O eye of clear sight! O darkened eye, O doubly darkened eye, O eye of darkened sight; like a cup of sour wine thrown away, Gula quicken the recovery, thy gift."

Many bricks having such prescriptions may be seen in the British and other archeological museums, and on some of them we may still read the laws governing the fees of the physicians. The Code of Hammurabi, written about 2250 B. C., on a pillar, tells us not only that a physician was well paid for curing a patient, but that in case of failure or clumsiness he must suffer certain penalties, even death, or lose one or

¹ Thompson, R. C., "Assyrian Medical Texts," 1924.



A SUMERIAN PRIESTESS PHYSICIAN, ABOUT 4,000 B. C.

*In her right hand she holds a dove, in her left (probably) a torch,
(sign of a midwife). (From the Musée du Louvre).*

both his hands, or pay a large sum of money to the family in case the patient was a servant and the doctor had not treated him according to rule. Even the wife and children of a surgeon might have to die for his lack of success in the treatment of a patient.

As for the actual practice of medicine by women, we find that one who chose not to marry might devote herself as priestess-physician to Ea or to Gula, learn to interpret oracles, recite the proper prayers at the proper time, and thus vie with Ishtar or Gula in healing the diseases of mortals by remedies as well as by charms and incantations. She must know the names and attributes of the healing gods and of the demons, what effigies to bury under the floor of the patient's house, what inscriptions to write on the bricks in order to win the favor of Gula, what to do against *Lamashtu*, must understand the causes of sterility, and how to alleviate the pains of labor. Pomegranates and models of eyes were generally buried beneath the floor, along with images of the gods, to ward off the evil eye and to insure strength and fertility. Prayers, when not immediately answered, were to be repeated louder and louder lest the god had gone away and could not hear.

The following is an example of such a petition: "All the evil that is in my body, may it be carried off with the water of thy body, the washings of thy hands, and may the river carry it down stream." And another comes from the library of Ashurnasipal, dated 883 B. C. and copied evidently from a much older brick; it is a prayer for relief of toothache caused by a "worm":

The marshes created the worm.
Came the worm (and) wept before Shamash the sun god,
Before Ea (the water god) came her tears.
What wilt thou give me for food,
What wilt thou give me to eat?
I will give thee dried bones,
And scented wood.
What are dried bones to me
And scented wood?
Let me drink among the teeth,
And set me on the gums;
That I may devour the blood of the teeth
And of the gums destroy the strength,
Then shall I hold the bolt of the door.
So must thou say this, "O worm!
May Ea smite thee with the might of his fist."

The healer should lay upon the tooth certain herbs mixed with oil, while repeating this incantation thrice.¹

¹ Thompson, R. C., op. cit.; also Boulton, W. H., "Babylon, Assyria and Israel," 1925.

Among these ancient Babylonian bricks and tablets and pillars is found the oldest story of the creation of the world and of the deluge. In the latter tale a mortal named Gilgamesh seeks to avoid death, for "so long as houses are built, so long as water runs to the sea, so long will death come to man." Gilgamesh is told by "the ancestor" to build an ark because a universal deluge is about to appear. He became so seasick in the ark that he prayed to the "*wife* of the ancestor" to heal him. She repeated magic words and gave him water and a plant of immortality, but a serpent appeared and carried off the plant, so "Gilgamesh went to the place where the worm devours all, and was clothed with dust."

Evidently "worms" and insects were then thought to be the cause of all the pains of fever and abscesses, and that only by the combination of religion and medicine could they be cured.

II. MEDICAL WOMEN AMONG THE EGYPTIANS

HAVING seen what appears to have been the status of women in medicine among those who lived in the valleys of the Tigris, Euphrates and Indus, in the centuries before the birth of Christ, we may find it interesting to turn to Egypt and the valley of the Nile.

Diodorus Siculus, a historian of the time of Julius Caesar, studied the customs and traditions related by Herodotus and other earlier writers, and he tells us that there were several distinct periods in Egypt during which women dominated men in almost every respect. At times women held public office, as in Sparta, while men did the cooking and weaving or went off to hunt or to fight. In 4000 B. C. the succession of females to the throne was made valid, and it seems to have been a queen named Nitocris who appointed the wise man Imhotep, in 3133 B. C., an alleged descendant of the god Ptah,¹ as court physician. This was perhaps an innovation and a reward to Imhotep and Ptah for writing medical books with instructions for improving the health of the people. These books of instructions were among the oldest books in the world. But an even earlier tradition tells us that there was a great king in Memphis, on the Nile, named Teti, 4366 B. C., who was a skillful anatomist.² According to the authority of Budge, the Egyptologist, Teti

¹ "The Instruction of Ptah-Hotep," translated by B. G. Gunn, 1909.

² Budge, E. A. W., "The Nile," 1912, p. 29.

or Teta lived at the time of Cheops, the builder of the second pyramid, 3733 B. C., but a thousand years more or less makes little difference to us now. At any rate, archeologists agree that Teti dissected human as well as animal bodies before he wrote his book on anatomy.

As elsewhere, the gods played an important part in medical treatment. Isis was the great goddess of medicine. It was she who gathered up the slain body of Osiris and mummified it to save the pieces intact. Her sisters Nephthys and Neith were queens of the night and protected mortals from the pains that trouble them after dark. Sekhmet, the wife of the medical god Ptah, had the head of a lioness. She was the bone-setter and therapist, and saved from fire as well as from sickness. Bes, the smiling little god with a Mongolian face, presided over the birth house at the temples where the women were confined, and Hathor, the cow goddess, fed the infant and cured sterile mothers. Ubastet, Sekhmet's sister, was an obstetric goddess and Meskhenet, of "the bicornate uterus" (Galen believed that the human uterus was bicornate) had charge of the hot stones over which women crouched in labor.¹

All these gods could harm as well as heal mortals;² hence the need of priestesses or wise women to procure their good will. Some of these priestesses had picture books with which to work, others received special oracles from their spiritual mistresses and learned how to address the gods properly.³ The appeal to Isis was not unlike the appeal to the Virgin today: "Hail Isis, deliver me from pain, from death . . . as thou didst deliver Horus, thy son." This was repeated hundreds of times followed by "Come remedies, expel my evil." To Sekhmet or Sekhet the priestesses appealed in the same way for a purgative or for the removal of a tapeworm.

It is evident from the records that to the Egyptians it seemed natural that women should be trained to become healers of disease. They had always been admitted to the royal medical schools. Pliny and many other writers tell us about the old school at Heliopolis, or On (near modern Cairo), which was already a very ancient foundation when Moses and his wife studied there. Its graduates were given public offices with good salaries, and they treated the poor in what we might

¹ Cumston, C. G., "An Introduction to the History of Medicine," 1926.

² The great god Amen-Ra, the sun god, was father of Osiris. Both carried the symbols of resurrection and immortality. There was also a female monster or demon, named Amam or Ammit, the Devourer, or eater of the dead, a crocodile-headed, lion-bodied, hippopotamus.

³ "Guide to the Egyptian Galleries of the British Museum," 1930, p. 202.

call free dispensaries. Euripides and Herodotus wrote eulogies on the intelligence of the Egyptian women and their skill in industry, commerce, medicine, and law. The first woman doctor of "the old kingdom" in the fifth dynasty, or about 2730 B. C., practiced during the reign of a queen Neferirika-ra. Her son was a high priest at whose tomb is a tablet describing his mother as the "Chief Physician." There was also a medical school at Memphis, where Ptah and Imhotep, or Imhetep, were revered gods and teachers.

At Saïs, near the sea on the Rosetta mouth of the Nile, was the woman's college where gynecology and obstetrics were specialties. There is an inscription found at Saïs which delights the heart of a modern woman doctor: "I have come from the school of medicine at Heliopolis, and have studied at the woman's school at Saïs where the divine mothers have taught me how to cure diseases," showing quite plainly that medical women were professors of Saïs and received pupils from all over the known world.¹

The tomb of Ptah, the medical god, at Sakkara, near Memphis, is one of the most elaborate and beautiful in Egypt, but it is especially interesting to physicians, for it shows the life of a medical practitioner five thousand years ago. In a tomb in the Valley of the Kings is the picture of a woman doctor named Merit Ptah, the mother of a high priest, who is calling her "the Chief Physician," although neither her costume nor her bearing indicate her medical profession or her importance.

As to the student's textbooks we have already seen that they had Teti's work on anatomy, which was as useful for the embalmers as for the surgeons. According to these lessons in anatomy we find that the ideas of the functions of the organs and veins were as crude as a child's idea of a telephone. The students were taught that there were two blood vessels in the head, probably arteries, through which the head drew breath from the heart and carried it all over the body; there were also two blood vessels in each leg and arm, in the forehead, neck, eyelid, nostril, etc., and two in the left ear "through which the breath of death enters the body."

In an Egyptian textbook on medicine we find diseases of the abdomen treated first, then those of the eyes and the urine, then worm

¹ Sarton says (*Isis*, 15, 1931, p. 357,) that Darius (521-485 B.C.) ordered Uzahorresenet to reorganize the medical school at Saïs and to provide it with all necessary books and equipment. Saïs then remained the center of medical exchange between the Greeks and Egyptians and others until the founding of the school at Alexandria.



HATSHEPSUT, MOST FAMOUS OF ALL THE WOMEN PHARAOHS
OF EGYPT. TIME OF MOSES, 1500 B. C.

diseases, erysipelas, epilepsy, burns and dropsy. There was also in very early times a great encyclopedia of knowledge in forty-two books, including law and medicine and every other subject. It purported to have been written by the dog-headed god Thoth, who corresponded to Hermes of the Greeks, and among the volumes were four on medicine, including one on gynecology and one on eye diseases. Just when these books were compiled it is impossible to say, but they are a part of the material of the Ebers papyrus, the contents of which go far back, although under their later title of the Hermetic books of Hermes Trismegistus, they may have been written in the third century A. D.¹ At any rate they have much more to do with magic, for which the Egyptians were famous, than with medicine.

Among the medical papyri found in Egypt that of Georg Ebers is perhaps the most important. It was formerly supposed to have been written by the mythical Imhotep, in red and black hieroglyphics or picture letters which fill one hundred or more pages. It was found at Thebes across the Nile from Luxor by this Leipzig professor and archaeologist, Ebers, in 1874, and it is now thought to date from the sixteenth century before Christ. Its subjects include medicine, surgery and anatomy, the body being divided into three times twelve parts, each under a sign of the zodiac. Its remedies for pain and sickness include substances from the animal, vegetable and mineral kingdoms, everything from ink to spinal fluid, but even so it may not be as old as the surgical papyrus found by Edwin Smith,² or the Book of the Dead. However, its topics range from the bite of a crocodile to procidentia uteri, and its animal remedies contain such substances as one-thirty-second part of the tail of a mouse, a beaten ostrich egg, and cream of bullock's hide. For dental surgeons there were rules for hooking out teeth, for filling cavities with gold, for making false teeth and bridging spaces. For throat specialists there were prescriptions for fumigations to cure "the ball over which the patient can not swallow." One of these prescriptions is somewhat

¹ For a discussion of this subject see Thorndike, Lynn, "History of Magic and Experimental Science," 1923, vol. I, p. 289.

² The Edwin Smith papyrus deals with injuries, and in their treatment magic has almost no part. Advice for not touching inoperable cases is clear. Some archeologists put its date at 3000 B. C., but as the original document is lost its date is uncertain. Among its treatments we find that the Egyptians had lint for absorbing blood, plugs or swabs of linen for packing the nose, bandages, adhesive strips, stitches of thread, cauteries, splints, etc. Glosses of later writers mention the significance of the pulse as indicating the action of the heart, also they speak of the throbbing vessels in the brain and its convolutions, its covering, its fluid, and paralysis that comes from injury to its substance.

like one written on a stone now in the Metropolitan Museum in New York; and it calls for lapis lazuli, green stones, and "ikybu," Ethiopian schist and wine, well mixed and ground to powder, then to be burnt and inhaled. This stone is 4 inches square and half an inch thick. It may have been written by a Thebes physician in his office more than three thousand years ago, and quite likely was used by priests and priestesses, women doctors and men doctors, in the dispensaries.

The Edwin Smith papyrus, now in Chicago, is 184½ inches long and 13 inches wide, having five hundred lines dealing with surgical injuries of the upper part of the body and spine, and, as has been said, it may be even older than that of Ebers. Evidently the ancient Egyptians did not lack textbooks or teachers of medicine, for the people of each century based their work on the materials of the preceding centuries, adding little new.

Therefore we can easily understand how it was that women and men studied medicine together and used the same remedies in the same way. In a mortuary chapel at Thebes is a picture of a slave girl of about 1420 B. C. skillfully operating on the foot of a woman patient while the men of the family look on in evident admiration and sympathy. Perhaps the slave girl was an apprentice to her mistress; but the picture shows what was probably one of the common customs in Egypt under the great Pharaohs at the time of Moses. Surgical pictures are not rare on the walls of the temples or tombs. At Kom Ombo, for example, south of Thebes on the Nile, is a temple on the walls of which we find portraits of Cleopatra, as the reigning Pharaoh, with Julius Caesar and their son, Caesarion. Ptolemy XIII stands near, apparently in the care of five physicians, all deities, of whom two are women, Isis and Sekhmet, along with Ptah, the ibis god, and Horus of the hawk body and head. As Thoth, the ibis god, is generally the scribe of the gods and famous for his cures of stomach ache, we may imagine what was Ptolemy's disease. Each of these gods hands the key of life to the sick man and Isis gives him a branch of her favorite vervain with its spike of blue flowers. The scene is laid in an operating room in which the long table is covered with surgical instruments: scalpels, bleeding-cups, forceps, canteries, hooks, a trephine, sponges, needles, jars of ointment, splints, containers for the poppy juice and mandrake to ease pain, castor oil for lubrication, and materials for poultices such as burdock leaves, mullein plants and milk-weeds, which together with senna and tamarinds still grow within the temple precincts.

We know the name of at least one surgeon, Hr'nkhm-Say, whose tomb is in the Memphis region. This surgeon lived about 4500 years ago, in the sixth dynasty, and in one of the wall pictures of the tomb we see him sitting in front of a patient whose arm he is about to cut with a square stone knife. Other patients are waiting, one of whom is impatiently holding his aching arm and whimpering that he is in a hurry and that the king had sent him. There are pictures showing surgeons and nurses lancing boils, women midwives circumcising babies, assistants operating on feet, and so on; but the illustrations of major operations have been destroyed. We are told, however, that women surgeons performed Caesarian section, removed cancerous breasts, and, according to Herodotus, who was in Egypt in the fifth century B. C., they were especially skillful with their stone knives and also expert in the use of splints for setting broken bones.

As for gynecological writings there is a papyrus discovered by Sir Flinders Petrie, called the Kahun papyrus, dating from about 2500 B. C., which deals with this subject and with certain veterinary diseases. It contains no magic or incantations, and we may suppose that it was written for the students at Saïs. In it we find that the diagnosis of pregnancy was left to certain women specialists who gave a prognosis of the sex of an unborn child based on the color of the pregnant woman's face—if green the baby would be a boy. If a woman had spots before her eyes she would be sterile. A test for sterility was made by mixing watermelon with milk of the mother of a boy. This was given to an anxious patient to eat, after which if she vomited she would bear a child; if she had flatus she would be sterile. Sterility was treated with glands of animals and by the performance of certain exercises, dysmenorrhea with hot drinks of herbs which women specialists raised in their own gardens. In the medical school women had studied female anatomy, as has been said, along with the art of mummifying bodies, and it was they who circumcised the boys and taught mothers how to wean their babies, sent pregnant women to the birth-houses at the temples at the proper time, and then, with the help of the gods Bes and Hathor and Isis, they guided the labor. Priests on the roof of the temple were meanwhile consulting the sun, moon, or stars for the horoscope of the infant. If the labor were difficult and unusually long, the crocodile god would have to be summoned, and the aid of all the gods, as consultants, might be loudly invoked. Their statues stood in shrines in the most remote and the darkest part of the temple where their answers, uttered by

priests on the roof, could with difficulty be distinguished only by the priestesses who then would carry out the gods' commands, to "burn turpentine near the patient's abdomen," or to "rub the abdomen with a mixture of oil of saffron and beer," or to "mix marble dust and vinegar and place it on the abdomen" to ease the pains of labor.

During the hours of labor the patient crouched over sizzling hot stones or, while sitting on the birth-stool, submitted to the pommelings of the nurses; but her own sufferings mattered nothing if only her baby had a good horoscope. The Egyptians were experts in astrology and astronomy, which sciences they had taken and developed from the Babylonians.¹

Children's diseases were treated according to certain specified rules by men or women as doctors or priests. Even the diet was prescribed by law and it contained a liberal allowance of fruit, fish, and vegetables, and probably broad beans and lupins, which are still grown in Egypt as the staple of diet. The bodies of the little naked children were oiled with castor oil to prevent poisoning from insects, but, as Sir William Willcocks has pointed out, it may be that mosquitoes do not poison human beings where beans grow in plenty. One curious custom among the Egyptians of long ago was to smear the heads of children with an ointment made from the pads of the feet of dogs, the hoofs of asses, and crushed dates, probably to cover up and kill the vermin. Worms were expelled by fern seeds and pumpkin seeds.²

There is an interesting and pathetic picture on the walls of the tomb of Ramses III, in the barren Valley of the Kings, near Tutankhamen's tomb, which shows a father taking his little son to Isis to be healed, but Isis turns her head away and raises her left hand as a sign that the little fellow must die. In another picture Isis, in better humor, gives a new necklace to a little princess who is having a hard time with teething, and while giving the present she also holds the child's chin and looks carefully into the sore mouth in a very sympathetic and human way. Another interesting picture of a child of 3500 years ago shows us a boy with a withered leg whom a priestess presents to Isis together with the appropriate offerings and prayers. Isis heals the boy and we

¹ Murray, M. A., "The Bundle of Life." *Ancient Egypt*, part 3, p. 65-73; "Isis," p. 515, 1931.

² Wehrli, G. A., "*Das Wesen Der Volksmedizin und Notwendigkeit einer geschichtlichen Betrachtungsweise derselben*," in "Essays on the History of Medicine," presented to Carl Sudhoff, on his seventieth birthday, 1924, p. 369; Jayne, W. A., "The Healing Gods of Ancient Civilization," 1925.



THE MOST ANCIENT KNOWN PICTORIAL RECORD OF A WOMAN
DOCTOR

An Egyptian stele, representing a woman doctor presenting her patient to Isis, with offerings. The boy has had poliomyelitis. Isis cures him, as we see from the smaller figure at the lower right hand corner. About 3000 B. C.

see him again with both his legs straight and sound. Gifts to Isis were always white—flowers, or berries, or garments; and the rules for approach to her altar were quite definite. The priestess-physician must stand before her altar or statue impersonating the patient and saying, “O Isis, thou great charmer, heal me . . . I am little and lamentable . . . deliver me from typhonic things and from deadly fevers of every sort,” etc. Then Isis would perhaps answer, “Make a plaster of lettuce, one part; dates, one part; boil in oil and apply”—to the abdomen, for example. If the patient had an abscess, Isis might say, “Take crushed dates, beans, resin of acanthus, lint of linen, sweet myrrh, sweet beer, and apply as a plaster.” For heart trouble or dropsy, the advice was, “If the blood has stopped and does not move, bring thou it in motion . . . and apply this most excellent plaster of ox tallow, crocus seeds, coriander, myrrh, and aager tree, pulverized.” Or, as we have already seen, the priestess-physician would begin with “Hail Isis, deliver my patient from pain and demons,” etc.

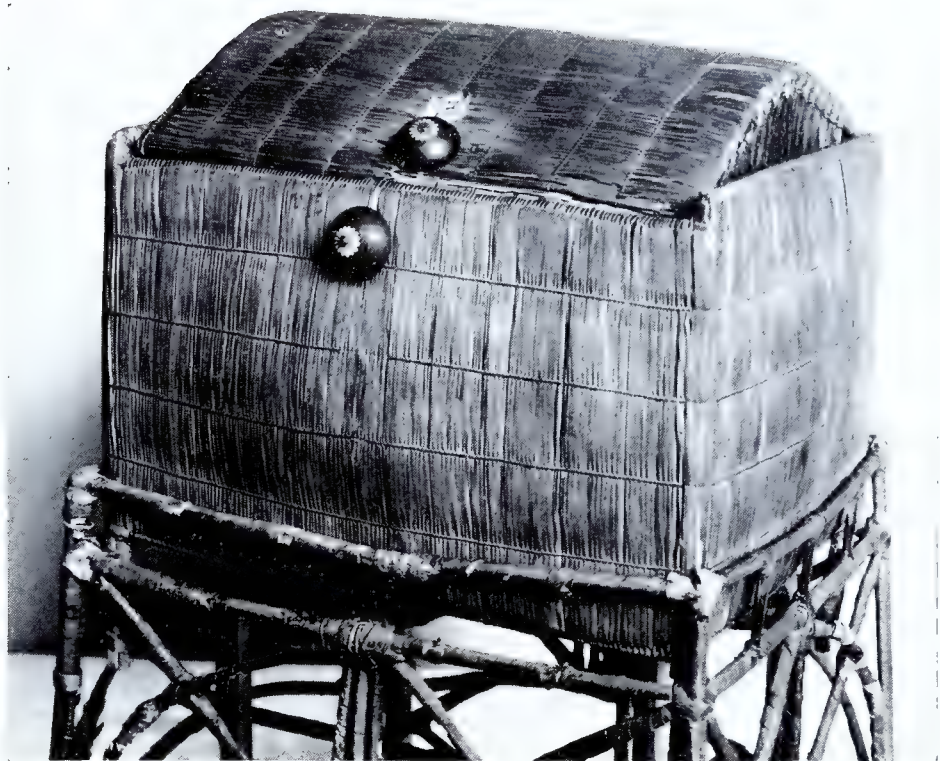
Many of these prescriptions on papyrus or bricks are now in the great museums of the world. They date from the time of Cheops to the time of the Ptolemies, and they contain the rules for making not only plasters but also infusions, and powders made from every known plant and every portion of the carcass of an animal and its excreta. Many prescriptions were long and intricate and called for dozens of ingredients; but far pleasanter than nauseating drugs were the charms and necklaces that could be worn to ward off the demons of disease. Historians tell us that if the doctors “gave up” a patient he was placed beside the road for consultation with the passers who might have seen some wonderful cures of such a case. The Egyptian pharmacopoeia was memorized by the learned people as well as by the doctors, and those who had gardens raised medicinal plants for the public as well as for themselves. There are still many of these old herbs growing in waste places in the Nile valley, although every inch of fertile land is supposed to be cultivated commercially.

Among the most learned Egyptians the queens easily led in all medical matters. From the days of Queen Mentuhetep (2300 B. C.) to Hatshepsut (1500 B. C.), almost one thousand years later, and then nearly fifteen hundred years more to the bewitching Cleopatra of the first century before Christ, women rulers were always students of medicine; and there were always women doctors, nurses, and slaves who undertook the care of the sick and the preparation of medicines. There is in the Berlin museum what is probably the traveling medicine kit of

Mentuhetep, a queen of the XIth dynasty at Thebes, about 2200 or 2300 B. C. It has been called a toilet case by some critics; but it contains a large cedar chest or *see* a bamboo case within which is a covered wicker chest which seems to be much too large for usual toilet purposes, especially if compared with the toilet articles of other queens. It holds five large alabaster jars for ointments, one of serpentine for tinctures, two measuring spoons, a mixing dish and several dried herbs, and was probably buried with the queen for the use of her large retinue in the next world. Her cosmetic box and her best wig were also placed near her mummy, and though we have no portrait statue of this old queen we may picture her as proud of her personal ability to be helpful to her subjects in time of suffering.

Unfortunately, the medicine cases of Queen Hatshepsut and Cleopatra have not been found. Hatshepsut's virtues and her great learning are blazoned on her obelisks in New York and London, and also at Luxor in Egypt; her beautiful and intelligent portrait statue may be seen in many museums as well as at her temple of Deir-El-Bahari, on the Nile. Other likenesses and eulogies of Hatshepsut were erased by her brother and successors, and their own substituted in her place, so that for many centuries it was thought that her good deeds and peaceful reign were theirs. In recent years Hatshepsut has been credited with great buildings, obelisks, and temples, as well as with keeping peace all over Egypt and the contiguous countries, and today it is suggested that it was she who discovered the baby Moses in the bulrushes. Professor Garstang, the archeologist, has recently found in Jericho scarabs and signet rings indicating that the Exodus of the Israelites, as told in the Bible, occurred immediately after her reign, partly because of her brother's jealousy of Moses.

Hatshepsut was as great a queen as Elizabeth of England. She was a pacifist in days of war and plunder, a serious philosopher in times of superstition and magic. Her temple was dedicated to many gods but chiefly to Hathor, the cow-headed god of mothers and babies. On the walls of the temple birth-house we see the mother of Hatshepsut before the birth of her daughter, accompanied by the ram and frog gods, imploring aid from the ibis-god in her confinement, and then proceeding into the sanctum of Hathor where the baby was born. Later we see this baby taking milk from Hathor, under whose protection she was to rule as Pharaoh. The inscriptions on the temple walls tell the story of Hatshepsut's peaceful conquests of the people of Punt, further south,



THE EXTERIOR OF MEDICINE CHEST, EGYPT, 2300 B. C.



OBJECTS FROM THE MEDICINE CHEST OF AN EGYPTIAN QUEEN,
2300 B. C.

By permission of the Berlin Museum.

the devotion of her various subjects, and their intelligence in agriculture and the arts. We may be sure that the three great medical schools flourished during her reign, for we know that she must have sent Moses and his wife Zipporah to study at Heliopolis. Libraries and observatories also flourished, while sanitation and hygiene were not forgotten. She had enormous gardens of herbs, parks, and swimming pools for her people, where they were encouraged to amuse themselves and to eat her fruits and imported luxuries.

We have seen what were the usual remedies used at the time of these queens—rather vile tasting mixtures most of them must have been. Sir Frederick Treves has said that many people prefer strong medicines, the more pungent and disgusting, the better and the more miraculous the cure. The Egyptians raised their own emetics, diuretics, cathartics, sedatives and vermifuges. They had squills and copper salts, and hemlock, groves of date palms and fig trees, acres of opium, and many other remedies which we still use in the twentieth century.

Not much advance was made in medical ways and means after Hatshepsut's time. It was left for the scientists of the far West and North to clarify the pharmacopoeia, and to find the key to the hieroglyphics that tell us the story of the Egyptian queens and priestesses and other medical women. In 1904 the first director of the American Mission Hospital at Tanta, between the Rosetta and the Damietta branches of the Nile, installed a woman doctor named Lawrence at the Tanta hospital, and from there, like the women doctors of old, she went all over the adjacent country healing the sick and teaching hygiene. This hospital was built with American money contributed by the women and children of the United States.¹ Budge says that hundreds of patients annually fill the beds and thousands are treated at the dispensary and in the daily clinics. The physicians, as well as the nurses at the clinics, are all women, and we may feel that the work of the old Egyptian teachers is continuing after the lapse of many centuries. There was a time in the seventeenth and eighteenth centuries when Egyptian mummies were ground to powder for medicine and, as Sir Thomas Browne wrote, "What time hath spared, avarice now consumeth; Mizrain cures wounds and Pharaoh is sold for balsams."

Budge, E. A. Wallis, *op. cit.*, p. 416.

III. THE HEBREWS AND THEIR MEDICAL WOMEN

STRANGELY enough, pious Hebrews believed in only one god, the great and powerful Jehovah, and in none of the lesser gods of the Assyrians or Egyptians. From the time that Abraham left Ur there are few allusions to the gods of his fathers, but many instances of the return of the Israelites to their old idols which the prophets deplored.

Of the medicine of the Hebrews much can be learned from the Bible, the Talmud, the Niddah, and other Jewish writings.¹ Since to the Jews was given the injunction to be fruitful and multiply, we may infer the necessity of midwives and pediatricists as well as hygienists. Sanitation and the prevention of disease was as much a part of their religion as obedience to the other laws; and from Genesis to Malachi there are many allusions to the medical care of women and children by women who had been taught by other women of their own country, as well as by those who had studied in the schools of Egypt.

Examples of the medical women of the Bible and their skill are found in many of the old Books: Pre-natal life is described in Job X, 10-12, and Psalms CXXXIX, 13-17. The care of infants is discussed in Ezekiel XVI, 4-5. Details as to the pregnancy of Rebekah and the birth of Esau and Jacob are told in Genesis XXV, 19-24. The account of Rachel's death when Benjamin was born comes from Genesis XXXV, 17. The names of certain midwives are recorded in Exodus I, 15-19, where we find that Shiphrah and Puah, being ordered by Pharaoh to kill the male babies at the moment of their birth, answered that the Hebrew women were so quick in labor that the midwife had no opportunity to do this for the child was born "ere the midwife come unto them."² We find that either a nurse or the midwife cut the cord, washed the baby, rubbed it with salt, and then swaddled its body. These midwives were sufficiently quick-witted to frustrate not only the Pharaoh but even Yahweh, or Jehovah, for in Genesis XXXVIII, 27-30, there is told the story of the birth of twins, Perez and Zerah, the sons of Judah. When the midwife of Tamar found the first baby's hand presenting she quickly tied a bit of red ribbon around its wrist and replaced the hand; then,

¹ Macht, D. I., "Embryology and Obstetrics in Ancient Hebrew Literature," *Johns Hopkins Hosp. Bull.*, 1911, p. 143.

² Exodus I, 20: "Therefore God dealt well with the midwives and the people multiplied and waxed mightily."

after certain manipulations, the second baby was born first, but the red ribbon proved the priority of Perez.

In the Talmud and Niddah there are discussions of obstetric operations performed by women, among them embryotomy, Caesarian section, twin births, the care of the placenta, monstrosities, the death of the mother, menstruation, etc. In the Book of Exodus we turn to Chapter IV, 25, and find that Zipporah, a Midianite, the wife of Moses, circumcised her own son with a flint knife, as she was accustomed to circumcise the babies of others. Midwives also understood the use of the vaginal speculum in uterine diseases, how to perform occipital version—since this was the only proper way of entering the world—and they used probes, scalpels, cauteries, tenacula—in fact, as Sarton says, there is no reference in the Bible to surgery excepting these obstetrical operations, and to the method of bandaging a broken arm (see Ezekiel XXX, 21). Abrahams, on the other hand, says that Jewish medicine was ahead of that of every other country through ancient times and the Middle Ages.¹

It is not known where all the Hebrew doctors received their medical education, but, as we have seen, Moses studied at old Heliopolis, in Egypt; and, as it was a coeducational and priestly school, it is probable that Zipporah studied there as well as at Saïs. Moses knew all the magic and superstitions of many countries including Babylon. He was a great sanitarian and understood the hygiene of camp life, kept stores of supplies for the people, erected shelters for the workers as well as hospitals for the sick and needy, which he called Beth Holem, Beth Said, etc. Neuburger says that both men and women were well trained in diagnosis, were taught when and how and where to bleed their patients, condemned the drinking of wine before the age of forty, and had a long and useful list of remedies for every disease. These may have been Egyptian or Babylonian medicines, for it is said that the Jews developed the prophylaxis of contagious diseases, chiefly of leprosy, from the Babylonians. Among their medicines they used mandrake for sterility (as is told in the story of Jacob and the mandrakes²), and saffron, camphor, myrrh, cinnamon, senna, balm of Gilead, oil and wine for wounds, aconite and curare for poisons. Healing by hypnotic suggestion was shown in many of the acts of Moses, and of Samuel and Ezra and Solomon, and of Christ and the Apostles; but the Bible is by no means a medical textbook and we may only regret that among the writings of St. Luke

¹ Abrahams, I., "Jewish Life in the Middle Ages," 1896, vol. I.

² Frazer, J. G., "Jacob and the Mandrakes," *Proc. Brit. Acad.*, vol. 3, 1917.

there is so little professional lore, although, as Harnack¹ has pointed out, the vocabulary, with its medical terms, used in the Third Gospel and the Acts shows very clearly that St. Luke was, without doubt, a physician.

The Hebrews must have been in constant communication with the Phoenicians and Egyptians, and well acquainted with traditions of Assyrian medical practice. They used ancient Babylonian texts, obeyed the Hammurabi code of fees and forfeits, and demanded a tooth for a tooth, an eye for an eye that was damaged by the operator. Various organs are mentioned in the Bible showing the anatomical knowledge of the Jews. Exodus XXIX, 13 records information concerning the liver; Psalms XVI, 9, on the heart as the "cooking pot"; Daniel IV, 5, 13, as to the head where dreams are made; Daniel VII, 1, on the interpretation of dreams; Deuteronomy XXVIII, 22, concerning tuberculosis or consumption with fever and wasting; Job XVI, 13, on the kidneys and gall bladder; Proverbs VII records a tirade against the sexual diseases carried by lewd women; and I Samuel, XXV, 36-38, mentions apoplexy as the result of drunkenness.

Although it has been said by eminent Jewish scholars that the first nation to subordinate women was that of the Hebrews, nevertheless, even though considered menials, Jewish women were not only educated as midwives but as priestesses and seers, barbers, surgeons, anatomists, and teachers.

Although many women must have been honored like men because of their good works, as we read in that refreshing thirty-eighth chapter of Ecclesiasticus, even the exceptional and learned wife or physician-midwife was quickly divorced or killed for infidelity, was usually regarded as a minor or a slave, and was always subject to her husband or father. It seems quite modern to find that the learned Vashti gave up a royal throne because of independence and innate modesty; that an uneducated woman like Esther ruled a stubborn king like Ahasuerus by her tact and beauty; and that the medical or political advice of Deborah² was considered as

¹ Harnack, A., "Luke the Physician," Trans. by J. R. Wilkinson, 1906.

² Women, among the Hebrews, were doctors, midwives, nurses, and rulers. Deborah sings:

"Without or guard or forts I was secure;
I did not make my subjects' necks endure
The yoke of citadels; but having gain'd
The affection of their hearts, I freely reign'd."

Pierre Le Moyne, "Gallerie of Heroick Women," 1652, p. 6, says: "If we consider what was done under Deborah of Judea... we will confess that such miracles are wrought under the government of women as have not been done under that of men."

valuable prophecy as that of the holy men. Evidently many women had the courage of their convictions and studied what they pleased, but were not considered so exceptional as to be mentioned by name as doctors. We do find, however, that St. John, in his letters, wrote to "the elect lady" as he did to men, and "angels," and churches; and that St. Paul advised some of his own female relatives from Tarsus, to "relieve the afflicted through good works," but "in quietness," a most significant word to us. These women and a few others, whom the latter mentioned in his letters, are known to us by name, and we may venture a guess that Zenais, Philomela, Tryphaena, Tryphosa, Persis, Julia, Olympias or Olympas, and Phoebe, the deaconesses, all knew as much medicine as the men of the Christians, for they too were to be "helpers of many," since there should be no male or female in the church. What St. Luke thought of medical women is not revealed in his Gospel, but doubtless he had charity to all and was ready to consult with them in time of need.

It would be interesting to know what was done by medical women during the great epidemics of plague, when, for instance, the army of Sennacherib was destroyed in one night and even the trappings and saddles of the horses were eaten by rats, which evidently carried the bubonic plague wherever they rioted. It is said that there were 1500 outbreaks of pestilences in various districts of Judea during the lifetime of Christ, and that during the reign of Titus 10,000 people died in Palestine from some epidemic or other. We also wonder what was done for Job, and whether he had boils, or syphilis, or smallpox, or eczema; why the Hebrews associated certain diseases with goats and mice; and why, as in I Samuel, VI, 4, the people offered to the God of Israel five golden tumors and five golden mice "for one plague was on you all." When the wife of Phineas died in convulsions in childbirth, was it due to fright because the Ark of God was stolen, or because of the plague from which her father-in-law and husband had died, or was it from nephritis?

Many other such questions may be asked even though no answer is forthcoming. Perhaps archeologists may sometime find bricks or tablets to amplify our history of the Hebrew women in medicine. It is clear, however, that while it was not considered by any means impossible for Jehovah to ease the pain of childbirth, there must have been much more reliance placed upon the midwife who was undoubtedly as well trained in woman's diseases and general medicine and the treatment of

cases of the plague¹ and in surgery as the men doctors of her time.

And so, though not satisfied with our medical gleanings from Biblical fields, we must leave the Holy Land with its great history, its healing mountains, its prophets and seers, its midwives and deaconesses, and realize that, though few men or women physicians or midwives were honored by name, there were many of them in every community, for verily the Lord and His people had need of them.

IV. THE GREEK MYTHOLOGICAL BACKGROUND

WHETHER or not we are by this time convinced as to the priority of Assyrian or Egyptian medicine, we must now turn to a study of the Greeks in order to see why they rapidly surpassed the rest of the world in medical knowledge as a result of prior scientific investigations.² It was the Greeks who furnished the elements of physiology, pathology, symptomatology and nomenclature, if not of anatomy and obstetrics.

We have already found that the Egyptians, from their custom of mummifying the dead, studied anatomy much earlier than the Greeks, and they had a long list of household remedies for various diseases along with their religious hocus-pocus, and, moreover, they had no little surgical technique. The Hellenic mastery of art, architecture and poetry was far greater than that of any other nation; but for the actual teaching of anatomy and midwifery the Greeks, like the Hebrews, turned to the schools on the Nile.

In writing of the evolution of medicine, Baas³ says that both the oldest surgical technique and the beginnings of scientific therapeutics came from Greece, and were in the hands of women, as was the treatment of eye diseases and the care of women in labor. As time went on, women did the surgery, too; but, unfortunately, as general culture increased women became less and less willing to do medical work and these arts were taken over by men, or, as Baas puts it, "leider", the goddess-midwife died.

In the matter of gods,⁴ however, the Greeks refused to believe in the animal-headed gods of their eastern neighbors and invented many

¹ Bombaugh, C. C., "Plagues and Pestilences of the Old Testament," *Johns Hopkins Hosp. Bull.*, No. 32, 1893, vol. I, pp. 63f.

² Singer, C., "A Short History of Medicine," 1928.

³ Baas, J. H., "*Grundriss der Geschichte der Medicin*," 1876, p. 5.

⁴ Farnell, L. R., "Outline History of Greek Religion," 1921.

anthropomorphic deities of their own, although the snake was even there regarded as the symbol of infinite medical wisdom. Goddesses of healing were very numerous; and, while the feminine gods were generally gentle, sympathetic, and careful not to injure mortals, the most powerful gods were masculine and far more often angry, resentful, harmful, and cruel than their consorts.

With a little license we may assume that the gods and goddesses had human prototypes to account for their very human attributes. Demeter, a sister of Zeus, was a medical caretaker of women and children. Her daughter Koré, or Persephone, learned to be equally skillful in relieving pain, curing sore eyes, and soothing the toothache of children. In the Thebes Museum there are numerous tablets extolling the medical work of Demeter and Persephone signed by grateful patients, 3000 years ago; and in the British Museum there is a beautiful statue of Demeter, by Praxiteles, or a member of his school, sitting with a far-away look in her eyes as she searches for her lost daughter, and accepting meanwhile votive offerings of little marble pigs brought to her by other women who were fearful lest they, too, might lose their children.

In honor of these two goddesses the people of Athens celebrated, in the spring, the appropriate rites, which included a procession to Eleusis, fifteen miles away, along the Via Sacra, a dusty road even now. Across the Bay of Eleusis they also came in throngs, men, women and children, singing as they rowed over the water on their annual journey to the temple to pray to Demeter for health and prosperity in the coming year. The precincts of Eleusis, on a hillside, with its white marble buildings shining in the sunlight must have been very beautiful and almost dazzling under the blue Attic sky. There were long, pillared halls for the transaction of business or for rest, theaters and gymnasia, temples and altars, all of which in the minds of the excited people must have produced a great psychic effect. There, along with Demeter and Persephone, were to be found other medical deities, Diana or Artemis, and Eileithyia, forming the nucleus of a famous group of divine specialists in diseases of women and children. Eileithyia was the chief midwife of the gods, and it was she, high up on Mt. Titthion above Epidaurus, who attended the maiden Koronis when the baby Aesculapius was born. Pindar (522-443 B. C.) calls her the "daughter of powerful Hera that dost cheer the laboring birth." Eileithyia is pictured on the east pediment of the Parthenon awaiting the birth of Athena as of a human baby, while the other gods rush to see the miraculous birth of Athena from the

head of Zeus. If Eileithyia had been in a bad mood she would probably have been clasping her own knees and paying no attention to her patient. Thus she compelled Leto to bear her pains for nine days before the twins Apollo and Artemis were born, and because of jealousy she delayed the birth of Hercules and then cursed him with epilepsy or periodic insanity—so like mortals were the ancient gods. However, Eileithyia, in repentance, gave to Hercules the power of preventing disease and warding off the plague; and she taught him how to clean the Augean stables, the breeding place of flies, and to dry the malarial marshes where the miserable quartan fever originated. She dulled the pains of Semele when the infant Dionysus was born, that jolly god of mirth and drunkenness who was also a physician. In the British Museum we may see not only most of the beautiful frieze of the Parthenon, but also from another source a large marble panel on which in relief is Dionysus, the physician, visiting a patient; servants remove his cloak, musicians celebrate his visit, the house is garlanded for the occasion, and the patient rises from his outdoor couch to salute the doctor, pointing to the altar on which an offering is burning. Thus we infer that even in mythology the physician in Greece was treated with great consideration while the patient was actually in pain, and it is evident that Eileithyia herself must have been more welcome than any god at the home of a woman in labor.

Another medical goddess was named Genetyllis, to whom many an altar was erected in Greece. To her came women who wanted babies. She is represented as wearing a long chiton, girdled with a cord, and carrying a torch, the symbol of midwives for centuries. Many marble figures of her in relief or in the round, with instruments and servants, are seen in the museums of Greece; some of these figures were votive offerings from grateful patients who are seen kneeling before the goddess as if in labor, and presenting to her a wreath of olive leaves. The fees of these goddesses were large, collected before the patient was cured, and many of them were accompanied by a signed testimonial of the wonderful recovery.

At Delphi, Rhea, the great mother of the gods, was worshipped along with Apollo. Rhea was the wife of Chronos, Old Father Time, has been identified with Ge, or Gaia, the earth goddess called Kybele or Cybele by the Phrygians, and was said to have come from Crete with healing medicines. Rhea's medical partner was Artemis (or Diana), sister of the medical Apollo, who was also a goddess of childbirth. These medical goddesses again show the probable reality of

women doctors even in the hazy prehistoric times. At Delphi, where a great festival was held every fourth year, on a high plateau of Mount Parnassus, Rhea and Artemis were worshipped along with Apollo, as were Demeter and her children at Eleusis. There is no lovelier spot on earth than this hillside 1700 feet above the blue waters of the Bay of Corinth, amid hoary olive trees and dashing waterfalls, where marble temples and beautiful statues testified to the importance of the Delphic oracles and its gods, and where on her tripod beside the temple of Apollo over a chasm, sat the ignorant old woman, the Pythia, from whose frothing mouth came unintelligible mumblings to be interpreted for good or ill by the priests. These oracles, after the seventh century before Christ, were written in poetic fashion and codified for future use. They were learned by heart and repeated over and over again by the credulous Greeks who had come from all over the country for a consultation. It was indeed no trifling matter to receive such an oracle from a seer who represented the victory of Apollo over the serpent. Great sacrifices of bulls or rams or cocks had to be made at the altars before one could be admitted to the oracle; there were the sacred snakes to feed, and the priests to pay. It was also no small affair to travel to Delphi, two hundred miles by land from Athens and nearly as far from Corinth, or even to climb the mountainous road from the sea after a perilous voyage from the islands of the archipelago. But everybody thought the effort worth while, for even such men as Alexander the Great and Sophocles believed in the oracles and the value of any medical advice that might be obtained through the Pythia. It was Sophocles who said, "Though the gifts of the gods fade the gods never die," and that explains the long procession of singing people as they wound around the foothills and slowly climbed up the side of the famous mountain to Delphi, many of the singers having worked themselves into hypnotic states before arriving at the temple area. Finally, however, came the visit to the Pythia, the oracle, the interpretation, and the vision of an angry or pleasant god. If angry, no prayers availed to open his closed left hand, a sign of death to the patient.

But faith and works often went together at these great temple resorts, where, if the oracle was sufficiently mysterious, there was opportunity for the medical priests or priestesses to interpret it as advising herb remedies, baths, gymnastics, and practice for games. Water from the sacred springs was curative if judiciously applied; and there was sometimes a resort to surgery, especially to bleeding, or to vomits and

purges. The patients were generally grateful and presented to Rhea or Diana little clay or wax or stone models of the diseased organ for which they had sought healing. There are in the museums in Greece, and in other parts of the world, thousands of miniature legs, breasts, livers, doll-babies, locks of hair, finger-rings, combs, brooches, little jars of face-paint or of ointment, mirrors, and other trinkets, presumably presents to the goddess.

Besides these medical deities at Eleusis and Delphi there were many others as useful in sickness. Hecate, the moon goddess, was considered a specialist in children's diseases. She helped them through teething and fevers by using aconite teas. Zeus himself called her the nurse-mother. At Rhodes the two daughters of Helios, the sun god, were worshipped as midwives and healers. In Athens and Corinth, Isis and Aphrodite, foreign goddesses, were considered as great as Minerva Medica herself, and the muses, nymphs, dryads, and nereids were all called *iatroi*, or physicians. At Oropus every god of healing was invoked since it was thought that all of them were originally super-intelligent mortals, made immortal because of their medical knowledge, for

Men and gods above one race compose;
Both from the parent earth
Derive their old mysterious birth.

Patients who went to Oropus paid heavy fees and were then wrapped in the skin of a freshly killed black ram, and put to sleep to incubate their cures by dreams. There Athena, the four daughters of Aesculapius, Artemis, Aphrodite, and Leto were all worshipped. Aphrodite, in the form of a dove, was a specialist in skin diseases and children's fevers; Artemis and Athena cured blindness by the use of herbs; Leto, the surgeon, is said to have cured the wounds of Aeneas and others, and also officiated at difficult births. To her were offered models of limbs in gold and silver and ivory.

Pallas Athena, or Minerva, took, as her sovereign remedy, the peony, the symbol of medical men and women. Ocyroe, Cheiron's daughter, also used peonies to cure her patients, while Medea and Circe specialized in the antidotes to poisons, and were often mentioned in the early centuries of history. At Argos, in the Peloponnesus, Hera was the chief healing divinity, and the ruins of her temple still stand on the hilltop above the turquoise Bay of Nauplia, where the famous traveler Pausanias (117-180 A. D.) saw the temple during the reign of Antoninus Pius.

V. GREEK MEDICAL TRADITION

IT was above Epidaurus, on Mt. Titthion, as we have seen, that Aesculapius was born, the son of the god Apollo and a maiden named Coronis. According to one legend, the young mother left her baby in the care of a shepherd and went off with a mortal man, at which Apollo was angry and gave the little boy to the centaur Cheiron to bring up and educate as a physician. Soon the child became so expert in healing human ills that he even brought the dead to life. This so maddened Zeus and Pluto that they conspired to kill Aesculapius. Again Apollo saved him, and when he was of age he married Epione, by whom he had several children, all doctors. Homer merely mentions the sons of Aesculapius as healing the battle wounds at Troy, but his daughters' names, Hygeia and Panacea, have become household words for the prevention of sickness. Pindar, 520-440 B. C., says of one of the sons,

“Each of his several bane he cured;
This felt the charm’s enchanting sound;
That drank th’ elixir’s soothing cup;
Some with soft hands in sheltering bands he bound
Or plied the searching steel and bade the lame leap up.”

In the course of time many temples were erected to Aesculapius and his daughters all over Greece, but at Epidaurus was the largest of all the sanitariums and the most important for many generations. From being a mere Thessalian prince, Aesculapius became the great medical god, and his wife and daughter were made goddesses, or, as we say today, they were sainted mortals. There were more than three hundred such temples and health resorts or sanitariums¹ in Greece alone, where treatment and advice were given by the deities during sleep in the long dormitories. The priestesses of these temples were always represented carrying a basket of mysterious remedies for the patients, in case something tangible was ordered by the god or goddesses.

The ruins of the temples, dormitories, public halls, gymnasia, guest houses, and administration buildings, as seen at Epidaurus today, are most interesting. Above the plain rises Mt. Titthion, crowned with the remains of Apollo’s temple among the brambles and berry bushes. Off in the distance is the sea, and all around are well-wooded hills. A little stream runs through the locality, neatly bridged, with a long race track just beyond. On the side of the hill above the temples is the most

¹ Walton, Alice, “The Cult of Asklepios,” Cornell Univ. Diss., 1894.

perfect Greek theatre in the world, never changed by the Romans even after they became rulers in the Peloponnesus. In the museum are exquisite remains of broken pillars and capitals, statues of the gods, and a large collection of surgical instruments, as well as tablets on which are recorded the wonderful cures by surgery or other treatment, for which the patients gave thanks to their restorers. Walton, Farnell, Richard Caton and many other students of Greek history have given us descriptions of the life at Epidaurus during one of the quadrennial pilgrimages to the shrines of Aesculapius and the goddesses. We see the patients and their friends arrive at the sacred precinct; those in danger of dying are sent to an adjoining village along with midwifery cases.



A GREEK WOMAN SURGEON "LETS BLOOD." (500 B. C.)

The patients who are considered appropriate for treatment are then taken to the bath pools for ablutions, after which they feed the sacred snakes, give cakes to the dogs, pay their bills to the priests, and then are assigned beds or marble slabs on which to sleep and dream, or watch with one eye open for the coming of the god.

What we know of the treatment in these great Aesculapian institutions amounts to little more than tradition, but the priests and priestesses seem to have been skilful bleeders, quick operators, and excellent hypnotists. Pausanias records the story of one of the women doctors at Epidaurus named Amyte or Anicia, about 300 B. C., who was also a poet and a writer. She wrote the oracles of the god in verse and was a great favorite with the patients. From the votive tablets to Aesculapius and Epione and their daughters we can judge what sort of surgical treatment they gave their "cases," and though the reports of the cures are

ridiculous they are not much worse than certain testimonials of patients at the pilgrimage health resorts of Lourdes and the shrines of the medieval saints.

Of the testimonials at Epidaurus we have space for only a few samples. A child of three prayed the god for a baby. She slept in the *abaton*, or dormitory, where the god came; but, while promising her what she asked, he insisted that she had not asked enough. However, the child went home and carried a baby within her body for three years, after which time she returned to Epidaurus to pray for its birth. At this Aesculapius laughed and reminded the child of what he had told her at first. Soon the baby was born quite painlessly, and the little mother carried it home. Babies were not ordinarily born in the sacred precincts, for everything painful was kept at a distance in a sort of community village, where provision was made for all such emergencies. Hucksters, traders, banal entertainments and funerals, everyday business affairs and markets were sternly kept as far as possible from the religious affairs of the sanitarium. Still, even there, a rich patient had more likelihood than a poor one of receiving careful treatment. A typical cure is the following: A man had dropsy and was swollen beyond all human aid. He went to Epidaurus, bathed, paid his fees, and slept in the *abaton*. The god came to him in the night, cut off his head, hung him up by his feet to drain, and when he awoke he was again himself, head in place, and dropsy gone.¹

It is no wonder that Aristophanes, 450-380 B. C., scorned such testimonials and held them up to ridicule. A popular method of exposing these cures was by the mimes or dramas of Herondas, a century later than Aristophanes. These mimes were clever conversations, partly in pantomime, supposedly held between the patients or their friends who purported to have been cured; gossipy dialogues they were with a strong sense of humor, mimicking the sound of the god as he called his dog or clucked for the snakes. Still, in spite of pretended skepticism in sophisticated circles of society, the Greeks had a firm belief in dreams and miracles. Socrates, 469-399 B. C., who lived during the so-called "golden period," said that the visions of good men were pure and prophetic, and that when a patient had nothing harmful in his stomach and was quite peaceful he might lay hold on truth during slumber; but Euripides, 480-406 B. C., believed that "dreams that flit on sable wings" come from the

¹ Dannemann, Friederich, "*Naturwissenschaft und Heilkunde*," Essays in the History of Medicine, presented to Sudhoff on his seventieth birthday, 1924.

lower or earth world and are in no sense divine. He conceded that they might, however, be worth interpretation by a priest, because the whole air might possibly be full of immortal spirits to whom all truth was known.

It is said that Aristides the Just, who died 468 B. C., was once cured in a dream after he had suffered thirteen years without relief. Apelles, the painter, of the time of Philip of Macedon and Alexander the Great, was cured of long-standing dyspepsia at Epidaurus, but not in a dream, for though he promised a large fee and good testimonial, the gods refused to heal him unless he ate such unpalatable food (cheese, citron, and lettuce) as was prescribed, walked around the grounds with bare feet, bathed in cold salt water and wine which he detested, endured hard beatings, sweatings, and vigorous frictions with salt and mustard, drank a mixture of anise seed and olive oil for his headaches, and gargled his throat frequently. We see a certain amount of hocus-pocus in this active treatment; but, as a rule, before, and even long after, Hippocrates (460-377 B. C.) there was almost no science in medicine; although there was a wide belief in hygiene and the healing powers of nature as well as in the efficacy of the gods and goddesses of medicine whose statues are found in large numbers throughout Greece. Of these hundreds were statues of Hygeia, generally representing her as a beautiful maiden, with a serpent by her side, and a saucer of food in her hand from which she feeds the hungry creature.

From the seventh century B. C. through the period of Roman dominion in Greece, Hygeia, unlike other goddesses, is rarely seen alone. Usually she is introducing patients to Aesculapius or giving them some sort of treatment by his advice. She bears her own medical staff, the *caduceus*, or she carries a basket of herbs for the patients. She is always represented as beautiful and modest. On a gravestone in the Berlin museum we find her seated, crowned with a diadem, and in her lap three little "*Wickelkinder*," children in swaddling-clothes, whom she is tending. On a votive tablet from Smyrna is a torso of a woman who bares to the goddess her large cancerous breast. These are merely samples of the representations of Hygeia.

Such statues come from the best period of Greek art; but there are also interesting pottery bowls, and vases on which we find scenes of medical interest, such as one showing a woman holding the head of her patient while he vomits, evidently the result of an emetic so popular as a

remedy for an overloaded stomach;¹ and there are interesting grave-stones of doctors and their patients which tell a simple story with great art.²

We have omitted the story of the women of Homer's time because they seem to belong to every age. Chiefly interesting to us in the Homeric narrative is the tradition that Helen had been to Egypt to study medicine with Polydamna, the wife of a Greek named Thonis, and that Polydamna gave to Helen the famous nepenthe with which to poison her enemies or cure friends. We read in the fourth book of the *Odyssey*³ how Helen "cast a drug into the wine whereof they drank, a drug to lull all pain and anger, and bring forgetfulness of every sorrow."⁴ Both Herodotus and Diodorus Siculus mention this as historically true, and they reiterate that the nepenthe would calm a pain, soothe anger, and bring forgetfulness of sorrow. It was evidently an opiate mixed with some other herbs. Sarton says that the heroic men and women of Homer's tales knew as much about medicine as was possible in those days. They used hellebore, iron-rust, various pain-killers, burned sulphur, inhaled mandrake and poppy juice from a steaming sponge to produce anesthesia, and were skilful in removing spear heads and arrows, and in treating wounds.⁵ Homer said of Helen that the "physician outweighs many others in value," and again, of Agamede, that she "understood as many drugs as the wide earth nourishes," (*Iliad* XI, 739-745) for she was the daughter of Augeas of Elis.

"Agamede, with the golden hair,
A leech was she, and well she knew
All herbs on ground that grew."

¹ Holländer, Eugen, "*Plastik und Medizin*," 1912, pp. 74, 75, 87, 144, 145, 162, 194, 260.

² In the British Museum is a grave slab showing an elderly woman holding a pomegranate and a torch. Beside her stands a little girl holding her basket of remedies as Aesculapius was often shown with a little boy. There are many gravestones of women doctors, as we shall see later. The pomegranate was a sign of fertility, the torch the sign of a midwife.

³ Prose translation by Butcher and Lang, 1907, p. 39.

⁴ Polydamna is mentioned in the *Odyssey* (IV, 226 ff); she is supposed to have lived at Thebes, in Egypt, during the reign of the Pharaoh Sesostrius, whose temple and obelisk were at Heliopolis, the medical center of the country, during the XII Dynasty (2000-1780 B. C.) Theophrastus in his history of plants, does not exactly tell us what "nepenthe" was, but some critics believe that it was inula helenium in wine, though Plutarch tells us that it was mixed with verbenia, the remedy of Isis, and adiantum, in wine; Dioscorides and Galen said it was made from an Egyptian root called oinopia, while others think it was the datura stramonium, and, recently, still others that it was a preparation of poppies, or of our oenothera or evening primrose.

⁵ Neuburger, Max, "History of Medicine," vol. I., pp. 90-91.

In the tenth book of the *Odyssey* we find a nymph named Circe who changed Odysseus' followers into swine, and held him in her power for a year by her potions. And again in the *Iliad* (XIV) Hecamede is said to have revived Patroclus with tonic drinks and Pramian wine which contained goat's milk cheese, onions, barley meal, honey, and wine. Such a drink was made by Metaneira for Demeter, with which to break her long fast. In the *Aeneid* (I, 83), Vergil tells us that Medea, the wife of Jason who won the golden fleece, knew magic and could cure insanity. Pindar also vouches for this as a fact. Ovid says that Oenone, having been taught medicine by the divine Apollo, after refusing to heal Paris because she was jealous of Helen, committed suicide from remorse.

Thus we see that to Homer and other classical writers there was nothing unusual in the practice of medicine by women; nor did they necessarily use magic. Homer wrote that pestilences were sent by the invisible arrows of Apollo, thus begging the question as to their origin, but nevertheless he would not have cared to risk omitting to sacrifice a cock or a ram or a pig to the gods in time of sickness, even as Socrates on his last day. Homer mentioned men surgeons and their operations as well as physicians of both sexes. There was Podalirius, son of Aesculapius, who tended diseases invisible to the eye, and Machaon, the army surgeon "over thirty smoothly hollow ships," who cut out the arrows and sucked the poison from the wounds of Menelaus and applied balsams to soothe his pain. Podalirius had been a pupil of Cheiron and Centaur, who taught medicine to Aesculapius, or Asclepius, his father. Of Machaon, Homer says:

"He found a balm for every grief.
On some the force of charmed strains he tried,
To some the medicated draught applied;
Some limbs he placed the amulet around,
Some from the trunk he cut and made the patient sound."

Dr. Goyanes,¹ director of the Spanish Institute of Cancer, says that Homer mentions more than one hundred and thirty different wounds and injuries. In most cases these wounds were washed by women with warm water and covered with a sedative dressing. Sometimes it would seem that Homer describes cases which he himself had seen, like that of the soldier whose heart had been pierced by an arrow and who lived until the weapon was pulled out of the wound, when he immediately died. He mentioned another patient who must have had an injury to the

¹ See review of his "Surgery in Prehomeric Greece," in *A. M. A. Journal*, April 12, 1924.

brain stem when he fell to the ground "face first." Homer, moreover, adds that as a physician is worth ten men, a surgeon is worth ten soldiers. To the physician, however, the remedies of Egypt, "where prolific Nile with various simples clothes the fattened soil," were a necessity. And of the first physicians, Homer says that

From Paeon sprung their patron god imparts—
To all the Pharian race his healing arts.

Thus we see the value of medicine in Homer's time quite apart from temple cures and faith healing.

. VI. GREEK MEDICAL WOMEN

WHEN the Pythagoreans were teaching in Magna Graecia, in the sixth century before Christ, the wife and daughters of the master were helping him in his medical work, unmedical as it seems to us. Even though the Pythagoreans were more interested in religious and philosophical theories than in healing the sick, they wrote what may have been the first treatise on child welfare; and the women of the family of Pythagoras won the prize in a debate with Euryphon, a well-known contemporary physician, on the viability of the seven-months foetus, the women arguing that it was viable even before the seventh month. Osler, in his *Bibliotheca Prima*, quoting from Theodor Gomperz, says that no line of Pythagoras has come down to us. His "golden sentences" were probably a fabrication of the fourth century A. D.; but even so, no one doubts that there were great thinkers in his sect, both men and women, nor should one doubt that Aristotle's rule for writing deterred many learned women from preparing books, since he taught that a "writer should say everything he ought, nothing but what he ought, and say it as he ought," and women must have taken this to heart.

We are told that Aristotle, 384-322 B. C., and his wife Pythias spent their long honeymoon on Mytilene, Sappho's island, studying botany and biology and physiology. Later they wrote an encyclopedia together from material they had gathered there. Like many of our modern college women of the twentieth century, Pythias made a specialty of histology and embryology, and assiduously collected and examined specimens of all sorts of living things, although having no microscope. Aristotle was employing agents to gather specimens to be delivered to him in good condition for dissection. He and Pythias were especially interested in the study of generation, and consequently they collected

eggs of every possible vertebrate, as well as those of spiders and other insects. They wrote books on generation and histology, listing their observations carefully and deducting from them as logically as possible a theory of the fertilization and development of embryos. They even acquired a human embryo which was at "the age of forty days as large as an ant," and they studied the entire development of a chick. It matters little that Pythias did not sign her part of the researches, since we have Aristotle's word for it that she was his assistant; but for the sake of the archives of famous women her name should not be lost or her experiments go unrecorded. The history of animals, their heredity and development, their habitats and food were new to the scientists of that time; and a wide range of subjects was studied by the members of the Aristotelian school of philosophy, with a depth of logic that partly made up for the lack of instruments of precision.

Among the great women of Greece, as in Egypt, long before the Christian era, there were learned queens, of whom Artemisia of Caria was the most famous. Her husband Mausolus ruled wisely and well, and died 355 B. C.; but he is remembered chiefly because of the tomb which she erected to his memory, portions of which are now in the British Museum. On its summit is a great chariot in which stand Mausolus and Artemisia; and, though her face is partly obliterated, it is easy to see that she was a woman of character and intelligence. Even today we speak of her when we mention the flowers which she named for herself and her friends, for she was a medical student and a botanist. It was said that she knew every herb used in medicine. Her skill was praised by Strabo, Pliny, Suidas, and Theophrastus, and not doubted by Tiraquellus. According to Soranus of Ephesus, artemisia, the herb, was used in the bath to prevent an abortion, or as a fumigation in retarded menses or retained placenta. Another species of artemisia together with elaterium was used to cause abortions, and plantains and willows were used for metrorrhagia. Pliny says that it was she who discovered the value of wormwood as a drink, the absinth once so loved by Parisians; and she named the cyclamen, gentian, and lysimachia, for the kings of Arcadia, Thrace, and Ilium.

In Thessaly there were not only capable and trained medical women but magicians and evil women, who knew how to harm mortals as well as to help them. As surgeons they also could remove spear points and arrow heads, and cleanse a wound with soothing roots.¹

¹ *Iliad*, IV, 219; XI, 512, 830, 845; XVI, 29.

Whether the medical women of the great days of Greece were themselves writers or not, we know some of them by name and others by reputation; and though Pliny much later (23-79 A. D.) wrote of the "nobility of the profession of the *obstetrix*," it was still thought in his day that women doctors should be as quiet and inconspicuous as possible in their business so that "after they were dead no one would know that they had lived." But when a man like Seneca, about 4 B. C.-65 A. D., could praise the "skilful fingers of his woman doctor," and St. Paul could say quite casually that when there was any doubt of pregnancy five "*obstetrices, id est medicae*," should be called in consultation, one can not doubt that there had never been a time when Greek women were not doing good medical work.

We do not know the dates of the women doctors and writers mentioned by Pliny any more than we know the year of death of those whose tombs have been found. But he must have had authority for his statements concerning Lais and Sotira, and the Theban Olympias who wrote a book on abortions and sterility, and Salpe who wrote on eye diseases, and Elephantis, and Philista, the sister of Pyrrhus (318-272 B. C.) who was an *obstetrix*, and Victoria, "the Gynecia." Philista was sometimes called Elephantis, according to Soranus, who collected materials for an extensive biographical encyclopedia. They say that she wrote medical books, and was a professor or teacher or *magister* of medicine, and that she was so beautiful that she was obliged to lecture behind a curtain in order not to distract the attention of the students. The Lais above mentioned was a contemporary of Philista. Her specialty was to treat malaria with menstrual blood, and she or another contemporary is said to have reported a cure for epilepsy by an attack of malaria. How this was brought about is not stated, but it is quoted by Athenaeus. Lais also wrote on abortions, and some one has suggested that she was the woman mentioned as a friend of Aristippus, Diogenes, and Demosthenes, but the name was rather common. Salpe was said to use testicular preparations and bone marrow and other animal remedies in her work. These sound like strangely modern treatment.

In writing about medical women we should inquire where they studied and with whom. In the fifth century before Christ the greatest medical teacher was he who has always been known as the Father of Medicine, and although many of the works attributed to Hippocrates were probably not written by him, nevertheless to him we owe the start and the impulse of all scientific studies in the art of heal-

ing. Hippocrates was born in 460 B. C., on the island of Cos, off the coast of Caria, in Asia Minor. He was a great traveler and he founded schools of medicine in Cos and Larissa (in Thrace), where he died in 377 B. C. He may have met Herodotus, Thucydides, Plato, Pericles, and Aspasia, and all the other brilliant people of his time; and he must have heard at first hand of the battle of Marathon, 490 B. C., and of Salamis, 480 B. C., and of Xerxes' bridge over the Hellespont; and, if he did go to India or China to study, he was probably touched by the generosity and altruism of the Buddhists, and impressed with the teachings of Confucius.

Scholars differ¹ as to the writings and work of Hippocrates in gynecology and obstetrics, but he is frequently credited with establishing schools in these studies where women were received freely as pupils. The famous *Aphorisms*, however, give us a good idea of his teaching on these subjects. Among them we find allusions to the anatomy of the uterus, "the temporary home of the child," to the opening of the uterus to cure sterility, to the menstrual fluid as equivalent to the seminal fluid, and to the function of the uterus as causing grief and hysteria and depending on the moon and stars. He insisted upon the general use of the stool or obstetric chair in labor, and advised hot sitz baths and fomentations to hasten the first stage. He strongly urged the *obstetrix* to attend to the cleanliness of her finger nails, and to meddle with the patient as little as possible during her confinement. He did, however, advise the *iatromaia* or *obstetrix* to try delivering the patient on her knees or standing, if the last stage was unduly prolonged. Whether the patient had puerperal fever from bits of retained placenta, or not, he ordered the nurse to keep her in bed for forty days, only allowing her to perform on the fifth day the ceremony of dancing with her baby five times around a fire and then presenting it to the nurse in a grain basket for its training and food. The nurse, not the doctor, cut or tore the umbilical cord after the delivery of the placenta, but if the placenta did not come away whole the uterus had to be irrigated or cauterized. The baby was first rubbed with salt by the nurse, then washed and oiled and swaddled. Even before the birth of the child the nurse had been busy rubbing the patient's abdomen, or even raising her from the bed and suddenly dropping her to hasten the pains. Sometimes nurses sang to their patients to keep up their spirits when things were

¹ Adams, Francis, "The Genuine Works of Hippocrates," edited and translated 1891.

tedious. It was the *obstetrix*, however, who understood operative obstetrics, such as version, and performed it when necessary. Witkowski¹ says that many of the seven-month infants lived and were carefully fed by wet-nurses. Abortion was common and was not considered either dangerous or criminal, nor was the death of the mother thought to be so serious as the death of the baby; but in case of the death of both, the baby was buried separately in its own grave. The midwife or *obstetrix* was generally a woman who had had children, intelligent, clean, healthy, strong, quiet, prudent, not avaricious, and very well trained in her art. As a matter of course she knew certain magic words and when to use them. She cared for the patient for fifteen days after the birth of the baby, which she turned over to a wet-nurse of her own selection, and received her fee on a piece of dry bread.

According to post-Hippocratic teachings, perhaps emanating from Diocles of Carystos or from Herophilus, the uterus was the seat of many diseases, nervous, cancerous, or systemic. Hysteria or suffocation of the womb was common, especially in an unmarried woman whose womb was supposed to be lighter than that of a multipara. Such a womb in a fit of hysterics was drawn up to the liver by some attraction where it pumped itself full of blood and descended again to its own place.² In order to draw the uterus back more quickly than by nature alone the patient was given vile odors to smell while fumigations of sweet odors were made at the vulva, so closely related were nose and uterus. In the meantime the patient must live on cabbage and drink cabbage water. If the uterus were "adherent to the heart" she would require poppy juice, leeks, vinegar, juniper, and sage as medicines; or the physician might insert a pessary (tampon) of goose grease and pitch into the vagina. One of the symptoms of such a condition was vomiting and loss of speech. Thus we see how doctors and medical teachers were groping for the science of obstetrics without making sufficient investigations of their own. There was much philosophizing and speculation and generalizations, and few but Hippocrates were collecting facts and noting symptoms by which to study disease. Most of the so-called healers went to the temples for their facts, and we have seen how worthless their notes must have been. It is not known whether or not Hippocrates ever went to Epidaurus, but there is no evidence that he was impressed with

¹ Witkowski, G. J., "*Histoire des Accouchements chez tous les Peuples*," 1887.

² See article by Hunter Robb, "Hippocrates on Hysteria," *Johns Hopkins Hospital Bulletin* No. 23, 1892, p. 78.

the treatment at any sanatoria except those of his own founding. Diogenes (412-323 B. C.) in his tub was leading the simple life at Corinth, and evolving his theories of the circulation of the blood from mere speculation. Democritus (460-370 B. C.) was trying to count the pulse with a water clock and theorizing as to what its source was, and then talking about it in the market place; but Hippocrates was not only philosophizing but trying experiments and keeping careful records of them. He believed in nature as a cure for most ills, a change of scene for the neurasthenic, sunlight and fresh air for the consumptive, purgatives and sweats for the plethoric, music and the theatre for the weary business man; and, moreover, he watched the facial expression of his patients, attended to their diet, tried to regulate their four humors (blood, black bile, yellow bile, and phlegm) and adjust them correctly if possible.

The writings of Hippocrates were copied and recopied for centuries, used by Galen, and, more or less garbled, studied almost up to the eighteenth century, when critics began to use them chiefly for historical material. Clinical records of forty-two cases have come down to us from Hippocrates, so clearly treated that Osler and Sydenham took them as model records. Among these cases were quinsy, diphtheria, typhoid fever, pleurisy, dislocations of bones, injury to the skull, etc. It is difficult to believe that Hippocrates and his pupils were satisfied to know merely the anatomy of the pig or ape, but possibly such was the case; their knowledge of pharmacy and chemistry was nil. If we may judge their ideas of anatomy, therapeutics, and physiology from the pictures in manuscripts of uncertain date, and from the models of human organs used as votive offerings, we shall have to confess that their diagnosis and treatment were pure guesswork. Herodotus mentioned a skeleton at a feast, but we wonder what he was visualizing to himself; and Aristotle wrote that food was *cooked* in the stomach, that the blood took the cooked food to the heart to be made into more blood, and that the body had only eight ribs, so that even Aristotle, with his powers of observation, progressed very little beyond the mass of his contemporaries.¹

We have already cited Herophilus, sometimes, like Diocles, called

¹ Singer tells us that Aristotle believed that invertebrates were created spontaneously while vertebrates began as embryos though not as ova (Charles Singer, "History and Methods of Science: Greek Biology and Modern Biology," vol. II). Perhaps we misjudge Aristotle, for we take his theories only at third or fourth hand (Frank R. Smith, *Johns Hopkins Hospital Bull.*, Sept. 1893, p. 85).

the second Hippocrates; for in anatomy and obstetrics he added to the work of his forerunners, especially that of his teacher, Hippocrates.

There is a well known but perhaps apocryphal story of a famous woman doctor named Agnodice, a pupil of this Herophilus. She was evidently a great favorite among her women patients at a period when women doctors were sometimes accused of the ancient crime of performing abortions. To avoid notice, or for sake of comfort, Agnodice wore her clothing man-fashion, and when this was discovered by her rivals she was ordered to the tribunal to stand trial for practicing under false pretences. This made such a commotion among the women of Athens that they too rushed to the tribunal and demanded that the judges release her, for, said they, "You are not our husbands but our enemies if you condemn our Agnodice, who saves our lives." The judges thought it wise to release her and permit her to wear her chiton and dress her hair as she chose.

If we search for the works of Herophilus, Agnodice's master, who lived in the last third of the fourth century B. C., we shall find that it was he who founded the science of anatomy at the medical school of Alexandria,¹ dissected many hundreds of human bodies in his zeal for correcting certain ancient statements, named several organs of the body, and wrote a book on obstetrics for his pupils. This book was for many centuries attributed to the great Hippocrates. From him Agnodice must have learned how to perform embryotomy, using a boring and cutting instrument before crushing the child's head. She also performed Caesarian section on a dead mother and did other operations as taught by her master. The story of Agnodice was told by Hyginus, the librarian of the Emperor Augustus, who may have read it in an old book dealing with the history of medicine. Since that time many writers in addition to Pliny have quoted the tale in good faith.² Tiraquellus, a noted lawyer of the sixteenth century, takes up the cudgels for Agnodice, and quotes not only Pliny, but Martial (43-104 A. D.) and Celsus of the second century A. D., and Diodorus Siculus (90-30 B. C.), and Quintilian, the Spaniard (35-95 A. D.), and Apollonius of Rhodes (born 235 B. C.)

¹ Herophilus, 355-280 B. C., named the calamus scriptorius and torcular Herophili, and placed the seat of the soul in the brain. Baas, op. cit., p. 90, speaks of Agnodike, a pupil of Herophilus of Chalkedon, as "*die in Athen die Geburtshülfe übte*." Garrison, Fielding H., "Introduction to the History of Medicine," 1914, p. 71.

² See Haeser, Heinrich, "*Grundriss der Geschichte der Medicin*," 1884; Tiraquellus, Andreas, "*De Legibus Connubialis et Jure Martiali*," pp. 100, 101; "*De Nobilitate*," Chap. XXXI, *Foeminae Medicae*, 1566.

and Apuleius (born 125 A. D.—who wrote *The Golden Ass*), in order to prove that in each century and from necessity there were capable women doctors in practice who “should be saluted, for medicine is the safeguard of mankind.” Tiraquellus adds that, obviously, even if we knew not the name of one *obstetrix*, if men were not allowed in the lying-in room, there must have been women trained to manage labor. He says that from the time of Agnodice, Attic women were given the right of citizenship; and Demosthenes praised their skill, at the same time telling how gentle and useful his own wife was in caring for him when he was sick.

There must have been many medical schools in ancient Greece and Alexandria. Agnodice's teacher, Herophilus, taught large classes of men and women students in Alexandria, while the schools of Hippocrates were still flourishing in Cos and Larissa, and the rival school of Cnidos, in Asia Minor, was working on quite an independent basis. To the Cnidians symptoms were classified as plants were classified, treatment was very energetic, and Isis and the other gods of healing were relied upon to cure where human means failed. The Cnidians had a large following of women students. Pindar, 522-443 B. C., a hundred years earlier, had said that the medical schools of Rhodes and Cyrene were the most popular in his day; and Herodotus mentioned the Asclepieia, or health resorts, where patients went in throngs to have their diseases diagnosed by laymen and treatment given according to the interpretation of dreams, as at the religious resort of Epidaurus.¹ The remedies used at the different schools were collected after a fashion by Theophrastus, 372-287 B. C., the friend of Aristotle and the legatee of his books and garden. Theophrastus knew the names of more than five hundred plants, and classified them as Aristotle had classified animals. He was, however, filled with the superstitions of his time, afraid to gather peonies or feverfew if a hawk or buzzard was flying overhead, believed in the magic properties of dictamnus and mandrake, and undertook the preparation of love-philtres and poisons.

Somewhat later Mithridates, King of Pontus, the sixth Eupator, 132-63 B. C., spent every spare moment of his time inventing an antidote for poisons, and his remedy was used for nearly two thousand years as

¹ For Herophilus and Erasistratus see Sarton, “Introduction to the History of Science,” vol. I, p. 159. Herophilus wrote a book for midwives (*maiotikon*), which is often referred to as by Hippocrates. Tertullian classed him among the butchers. Garrison gives a good account of this period in “Medical Classics,” *Journ. A. M. A.*, vol. LVI, no. 24, June 17, 1911, p. 1785.

the mithridate or, later, as theriac or treacle. His simple formula grew until the mixture contained one hundred and seventy-seven ingredients instead of merely rue, viper's flesh, walnuts, figs, and wine. Noted men from the days of Nero to Daniel DeFoe used this remedy as a preventive or curative for everything, especially during epidemics of the plague.¹ Incidentally it might be said that the Greeks were most humane in giving to prisoners under sentence of death or to the hopelessly sick and infirm such comfortable poisons as hemlock (*conium maculatum*), or in cutting the radial artery to provide euthanasia.² Even though the Greeks had so many medicines they seemed toward the end of their independence to have little faith in any but mithridate. Mahaff ("Old Greek Life," p. 71) says that the popular mind seized with enthusiasm on the theories of Hippocrates and his *vis medicatrix naturae*.

If we turn to the remarkable study of hygiene among the ancient Greeks written by Dr. Angélique G. Panayotatou, of Alexandria,³ a direct descendant of the old Greek doctors, we find, p. 24, the following significant paragraph: "The Hellenic spirit left to all future ages its creative genius. It was the ferment of the social and intellectual organism . . . Its influence was never one-sided, because the Hellenic spirit never expressed itself merely by one idea but by creative acts." She emphasizes the fact that this creative spirit and the belief in hygiene carried mankind up to the days of Pasteur in spite of countless vicissitudes and an imperfect understanding of the causes of disease. It was only when the Greeks had been weakened by excesses of all kinds, together with malaria and ergotism, that they fell an easy prey to their enemies, the Romans.

As for the later work of Greek medical women during the two centuries when scientific medicine in Rome was gathering momentum, it can be said that when Corinth fell (146 B. C.) hundreds of Greek women were taken prisoners to Rome; and the medical women brought

¹ For articles on the subject see Lynn Thorndike in "Essays on the History of Medicine," presented to Sudhoff, p. 13; also article in the *Johns Hopkins Hospital Bulletin*, June, 1915, by Geo. Corner, who calls theriac a "glorified Dover's powder." Andromachus, Nero's physician, wrote a poem on mithridate.

² Among the remedies of the Greeks are listed: sedum for skin diseases, bitter almonds for cough, oak galls for metrorrhagia, veratrum for hysteria, dried figs and barley mixed with flax seed meal for a poultice, juniper oil on a tampon to prevent conception, spices and other odors for uterine troubles, myrtle berries for diabetes, narcissus oil for weak muscles, rue for catarrh, poppies for pain.

³ Panayotatou, Angélique G., "*L'Hygiène chez les anciens Grecs*," Paris 1923.

the highest prices in the slave market. Through all the later "dark ages" (716-1453 A. D.), whether as pagans or Christians, women were commonly relied upon to do whatever men did not choose to do.

From the time of the women who walked with Plato to the present day there have always been women who were learned, delighting in scholarship, refinement, and self-determination. Thus the medical women of the period of Hippocrates and Herophilus became the predecessors of the medical women of the nineteenth century. The work of Dr. Mary Kalapothakes of Athens, during the last great war, proved her to be truly a follower of Agnodice and Phaenarete.

VII. THE MEDICAL WOMEN OF ROME

TURNING from Greece to Rome and the Etruscans, historians tell us that few medical men or women were practicing in Italy before Corinth was taken in 146 B. C., when Greek physicians were carried to Rome as slaves.

The early Romans, who worshipped numerous spirits corresponding to the objects about them and to the various activities of their lives, recognized many divinities who had power over their personal health. These spirits were named according to the diseases they healed. There was Scabies, Genitamana, Nascia, Fecunditas, Angitia or Angina or Angerona, who was the goddess of silence and of laryngitis, was mentioned by Macrobius, Flaccus, and Pliny as the goddess of pain and sore throat, and was skilled in using poisons and antidotes. It was said to be Fecunditas who delivered Agrippina when Nero was born, although Venus and Diana were supposed to be present as well as the great queen of the gods, Juno herself. Human women impersonated the goddesses. At Lake Nemi the supreme goddess was Diana, one of whose attributes was to treat all diseases of women. Almost countless clay models of the uterus have been found near her shrine, together with the torch, the symbol of midwives and of the Mater Matuta, who in the early hours of the morning opened the uterus and bade the baby come forth. More than two hundred years before the coming of the Greeks there was an altar to the Mater Matuta in the Forum Boarium, in Rome, as well as other temples and shrines to her along the seacoast in the Etruscan cities.

Bona Dea was the symbol of fertility, health and longevity. Her temple on the Aventine hill contained a cave filled with herbs to cure

sterility, and it was also the abode of sacred snakes. Pigs and money were offered at her shrine as at the temple of Demeter in Eleusis. Women were the only physicians allowed in her sacred precincts as healers of diseases of women.

Feronia and Fortuna¹ were two other important goddesses with medical attributes, to whom numerous temples were built. The temple to Fortuna, at Tivoli, still stands on a high terrace above the waterfalls, a beautiful monument to the artistic talents of the Roman architects. She was the divinity of all young girls who desired babies, and her name was generally coupled with that of Hygeia. Salus, or Safety, was a colleague of Hygeia. During a plague they were helped in their work by Apollo and Aesculapius. A statue to Salus stood in the temple of Concord in the Roman Forum, where she was busily worshipped, and her own temple stood on the Quirinal hill.

Carna, another goddess, had charge of both male and female internal organs. In her honor her devotees ate bean gruel and bacon one day in the year in order to insure good digestion for the rest of the year. Cloacina and Febris were the two important deities of fevers. The special season of Cloacina was in February, when marriages were not allowed because the Manes, or spirits of the departed, were especially active sending diseases to people, and keeping Cloacina busy. Febris was the goddess of malarial fevers, and of the Roman marshes, and evidently quite unable to cope with her business as the population of Rome and the Campagna increased. To her there were three temples on the hills of Rome, to which patients were taken to be purified by a severe diet and bitter herbs.

Minerva, however, was the great medical goddess, as well as warrior. Her altar stood next to that of Jupiter himself on the Capitoline. Without her favor no man of the army would start for Gaul; and many altars were erected to her, as well as to Mars, in far-away England. Even Cicero praised her skill, and said that, if anyone applied to her, he would need no other doctor; but Cicero also stated, "I believe that those who recover from illness are more indebted to the care of Hippocrates than to the power of Aesculapius."² (*De Natura Deorum*, III, 38). His own physician was Asclepiades, a Greek, born 124 B. C., whom we shall discuss later. Fabulla and Foquetia are almost as common names among the fabled healers of Rome as some of

¹ Fowler, W. W., "Roman Festivals of the Period of the Republic," 1899.

² Lanciani, Rodolfo, "Pagan and Christian Rome," 1893, pp. 54, 60, 73.

our names of saints today. Suidas, Eusebius, and Octavius Horatianus quoted them with respect. Fabulla was called by Galen "Lybica" and by Cornarius, "Livia," as if she were a living medical woman in their time.¹

Vergil gives us many a hint of the state of medicine during his life. For instance, when Aeneas was wounded by an arrow, Venus told Iapis to remove the arrow and wash the wound and heal it with the dictamnus plant.

Hic Venus, indigno nati concussa dolore,
Dictamnū genetrix Cretaea carpit ab Ida.

(*Aeneid* XII, lines 411-412)

Ovid, also, knew all the healing gods, and he especially praised Anna Perenna, "Dido's sister," one of the celestial medical faculty.

Isis and Bubastis, Egyptian goddesses of healing, were worshipped at Lake Nemi along with Diana, and in the ruins of their temples were found diadems, gold cups and plates, necklaces and other jewelry, draperies of heavy silk loaded with gems, vases, water jugs, and silver effigies of the goddesses. Lanciani speaks of the medical offerings to Diana at Nemi which were so numerous as to prove its great importance as a hydro-therapeutic center. Some of the *ex-votos* represent young mothers nursing their babies, some are surgical breasts like those found at the temple of Aesculapius on the Island of Tiber; and many of the treasures found at both these places seem to show that there were nearby shops manufacturing them for the pilgrims. The shrine of Minerva, on the Esquiline hill, has been a mine of such trinkets, among them certain amusing ones, like a head with bald spots presented by Tullia Superiana, with the legend "*Restitutio sibi facta capillorum.*" At Veii, a city in Etruria, votive offerings accumulated so fast that from time to time the old presents were thrown down the hillside, a cliff one hundred ninety-eight feet high, where, in the course of ages they formed a slope reaching nearly to the top of the cliff. These offerings were models of every part of the human body, outside and inside.

But, on the other hand, there were many Romans in those early days who, when in pain, trusted more in their mothers and grandmothers than in the gods. Cato said that the average family had a good supply of home remedies. Cabbage was a great favorite; its leaves made poultices, its juice mixed with honey healed fistulas and sores, and a tea of cabbage was used for debility. Pliny, as we shall see later, praised the home-grown herbs and theriac.

¹ Lanciani, *op. cit.*, pp. 72-73.

Caesar imbibed somewhat of the Hippocratic spirit and more than half believed in the possibility of preventing disease. But, though he felt that something in the marshes caused malaria, he could not convince the Romans that they should tax themselves to drain off the water; for, they reasoned, if Aesculapius had willed that malaria should not be cured it would be folly to try to cure it. A little later, in the time of Augustus, the Sibylline Oracle told the Romans that, as the Greeks had brought malaria, so to the Greek temples of Aesculapius the Romans should go, get the sacred snakes there, and build temples to the Greek god wherever the snakes chose to live. It so happened that, after the battle of Actium, 31 B. C., when the Romans were bringing home the trophies of war, a number of yellow snakes, which were part of the plunder, slyly escaped from their boat while passing the island in the Tiber and hid there in a cave. Taking this as an omen, the Romans built a temple to Aesculapius above the cave, and there carried on all the practices of the old Greeks, erecting votive tablets telling of their cures, and presenting to the god models of livers and abdominal organs, etc., many of which are now in the archeological museums of the world. This temple was also used as a refuge for sick slaves who, if they did not die, were freed when cured. Often the cures were as sudden as at Lourdes today, a sloughing wound being sometimes healed the minute the ashes from the altar touched it; and a diet of pine cones or nuts succeeding miraculously in stopping hemoptysis and curing a wasting cough. The temple sleep was, however, the important part of the cure, as even today in the island of Tenos, where a picture of the Virgin, said to have been painted by St. Luke, still works miracles of healing.

Before the conquest of Corinth by the Romans, in 146 B. C., there had been little scientific medical work in what is now Italy. Plautus (c. 254—184 B. C.) and Terence (c. 195—159 B. C.), in their adaptations of Greek plays, mention midwives in a disparaging sort of way, making allusions to their habits of imbibing too freely of strong wines. Ovid (43 B. C.—A. D. 18), also makes them a butt of his ridicule. He gives a picture of the midwives of his time, in despair over a slow labor, shouting to the goddess Diana for help and haste, four to seven times, with loud and ever louder voices, while all the people in the house sit with crossed legs and twisted fingers until the labor is eventually terminated. Doubtless there were midwives of that kind, but, with the advent of the Greek slaves, well-trained midwives and doctors, conditions began to be greatly improved, in Italy at least. It was a very long time, however, before the Romans modified some of their old barbaric

practices as to the acceptance of the new born baby by its father. If he denied that the child was his it might be left to die, or thrown, like Romulus and Remus, to the wild beasts. If the father did claim the child, he named it on the ninth day, and registered it at the Treasury on the eleventh. The wishes of the mother were scarcely taken into account until long after the Greek culture had become fashionable.

VIII. THE FIRST CENTURY AFTER CHRIST

THE nearer we come to the time of Christ, however, the more medical activity we find in pagan Rome; and during the principates of Augustus and Tiberius there were many women practicing medicine in that city. They were called *medicae*, *obstetricae*, and *sagae*; and as Cato classed all medical practitioners with mountebanks and robbers, so women doctors were often classed with abortionists and poisoners. During the first century B. C., women did all the obstetric work in Italy. One can imagine their visits—in chairs borne on the shoulders of stalwart men who jostled one another noisily in streets so narrow that it was necessary to turn into a side street to let a chariot or heavily laden donkey-cart pass, streets in which slops of all kinds were being thrown to add to the filth in the gutters. One can see such muddy lanes today in many of the small towns on the hills throughout the Roman Campagna, where the old stone houses in winter are as cold as the grave and the people sit out of doors in the *bel sole* to get warm.

In the age of Augustus many men were devoted to the study of medicine. A certain Philaethes wrote a book on the diseases of children; and Celsus, Scribonius Largus, and Musa produced works on general medicine. Sarton says that it was a time of application of old theories, however, not of scientific creation. New medical schools were opening everywhere, one of them having been founded privately by Cicero's physician, Aesclepiades, in 50 B. C. Eventually, in the time of Celsus, A. D. 14, this became the *Schola medicorum* of Rome. It became a government school in the time of Vespasian, and lasted until the time of Theodoric the Greek, A. D. 526. The teaching was done mainly in Greek.

Antonius Musa, the physician to Vergil and to Augustus, was evidently popular. Fifty years later, however, very few of his writings were remembered, and by the time of Galen (A. D. 131-201) only two

small booklets were in existence. One of Musa's works, a book on diet, baths, and the necessity of fasting according to the quarter of the moon, was dedicated to his wealthy patient Maecenas. Maecenas was a hearty eater, and Musa must have felt that he was in danger of dying from a condition called *strictum* (perhaps what we call arteriosclerosis). Musa treated his patients according to the color of their urine, gave them nauseating medicines, or an herb like betony, which he used for forty-seven diseases, including broken heads, sore eyes, pain in the bladder, the bites of dogs, and the pains of labor. For Augustus he ordered cold baths, and thereby cured him of stomach trouble. Vergil¹ said that Musa was in love with his profession, beloved of his patients, popular with the rich as well as with the poor, knowing all drugs, but depending on very few. We can not fail, however, to sympathize with Horace in the pangs of dyspepsia, Maecenas in a fit of gout, Augustus worried over his pimply face, and Vergil with his consumptive cough.

Celsus, a great medical writer, and a friend of medical women, "flourished," as Sarton says, under Tiberius (i. e., from 14-37 A. D.) He was a literary aristocrat, not a medical practitioner; and, though his work, like those of Cato and Varro, was an encyclopedia of all knowledge, in medicine it was the most complete of any work after that of Hippocrates.² He belonged to none of the so-called "schools" of medicine of his time, being neither a Methōdist (pronounced with long o) nor an Empyricist. Nor did he agree with his contemporary Themison, who paid no attention to symptoms, believing that all diseases had one and the same cause. The Asclepiadists were Methōdists. They believed in a condition of *strictum* and *laxum* (i. e., tenseness and looseness), of high or low blood pressure. Soranus of Ephesus was an exponent of these theories. Themison, on the other hand, was rather an eclectic, believing some of the theories of the Empiricists (who were experimenters and students of poison). By so doing he incurred the sarcasm of Martial, who asks in a stinging epigram how many patients Themison has killed in a year. Celsus, however, wrote for all. He was a great friend of Horace, the poet (who died 8 B. C.), and it is said that they spent many a quiet hour together in the library of Augustus, on the Palatine Hill. Later, Juvenal was another of the group of writers of this period. He gives us glimpses of the medical practice of the day as he saw it, and

¹ Crawford, R., "Antonius Musa," in "Contributions to Medical and Biological Research," dedicated to Sir William Osler, 1919, vol. I, p. 24.

² Sarton, *op. cit.*, p. 240.

dilates on its vices and general immorality.¹ He refers to the immoderate bleeding and cupping done, the large doses of aconite given for quartan fever, and many other remedies. He writes, of course, from the point of view of a layman. Celsus says that all the good doctors were doing their best to cure their patients both by surgery and by palatable drugs. Celsus was an admirer of the women doctors of Rome, and he gives us a picture of them in their busy practice, going about with pleasant tasting remedies, and followed by slaves carrying their instruments. These slaves collected the flasks of urine, applied leeches to the *stricti*, or gave poppy-juice to the *laxati*, and firmly held the patients during operations. Among their instruments were bronze handled knives with steel blades, polypus forceps with ivory handles like dolphins, instruments for removing arrow tips and lance heads from wounds, bone elevators and drill bows for trephining the skull, tenacula, catheters, curets, spatulas, needle holders and needles, slabs for mixing ointments, scales for weighing drugs, and cupping vessels. These, and other instruments like them, have been found in Pompeii and the other buried cities of this time.

Harless² speaks of the Greek women doctors in Rome during the first two centuries of the Christian era as *iatriæ* or *medicæ*. He says they were mainly Empiricists and midwives. Baas says that the *medicæ* and *sagæ* were the worst sinners against the Hippocratic law, and adds that they were often prostitutes who knew every method for producing abortion. Probably, as always, there were good practitioners and bad ones; for, as Marcus Aurelius says, "The wheel of the world hath always the same motion, upward and downward, from generation to generation"; and we generally hear more about the mountebanks and quacks than we do about the good physicians. Of the former, Cato, Juvenal, and Martial tell many stories. One quack talked to his dupes through the mouth of a snake, and another wrote his messages on a sealed slate. Such men had enigmatical signs over their doors, such as, "Phœbus unshown dispels the demon of disease."

Neuburger, on the other hand,³ says that the training of the women doctors and obstetricians of the period was often very good. They attended classes at the best Greek schools; they studied surgery as well as

¹ Cordell, E. F., "The Medicine and Doctors of Juvenal," *Johns Hopkins Hosp. Bull.*, 1903, p. 283.

² Harless, Ch. F., "Die Verdienste der Frauen um Naturwissenschaft und Heilkunde," 1930, p. 120.

³ Neuburger, M., "Geschichte der Medizin," 1911, p. 281.

general medicine; and they were obliged to have practical experience in obstetrics before taking cases of their own.¹

Soranus of Ephesus (98-138 A. D.)² wrote a book on obstetrics and gynecology for the women students of his day, in which he says that the *obstetrix* must know how to read and write,³ must be free from superstitions, have good sight and hearing, sharp intellect, strong arms and legs, soft hands, and long, thin fingers with short and clean nails, must understand anatomy, hygiene, therapeutics, the normal as well as abnormal conditions of the body, must love her work, keep secrets honorably, and have had considerable experience before undertaking to care for patients alone. Soranus continues, "That midwife is the most capable who knows the whole realm of therapy, dietetics, surgery, pharmacy, and who can give good advice, is not worried by sudden complications and is prepared to save her patient's life if possible, for she will often be called to visit the seriously sick." He adds that she need not have had children of her own in order to care for a woman in labor, nor should she be very young (not under twenty years of age nor over forty). Her knowledge of anatomy of the hidden organs should equal that of those that can be seen. She should know how to perform version, but she should never harm a patient. Soranus makes a distinction between women doctors and nurses,⁴ and says that a wet-nurse should have had three or four children of her own, be healthy, and have firm breasts. During difficult labor a midwife should have three assistant nurses to encourage the patient, rub her abdomen, be ready to receive the new baby, rub it with salt, and bathe it. The wet-nurse, after her body has become cool and rested, must always throw away the first drops of her milk before nursing the new baby. He condemns the custom of the Greeks and Scythians of plunging the new baby into cold water, and of bathing it in the urine of a healthy child, or in wine. If the baby does not cry lustily, Soranus adds, the cool air of the room will soon prove effective; and then it must be kept warm and lie with its head high, after its eyes have been bathed with water containing a little salt and soda.

¹ Von Siebold, "*Geschichte der Geburtschülfe*," 1901, p. 163.

² Soranus was born in Asia Minor, the son of Menander and Phoebe, and studied in Alexandria; he believed that women were the divinely appointed agents to care for sick women and children.

³ Lüneburg, H., and Huber, J. Ch., Transl. "*Die Gynäkologie des Soranus von Ephesus*," 1894.

⁴ Soranus of Ephesus, *De Arte obstetricia morbisque mulierum quae supersunt*, Dietz, 1838.

Sarton says that Soranus discusses the question as to whether men and women have different diseases because of their different functions, finally deciding that the two sexes do differ so markedly that women should be treated only by women; in fact, says he, "A midwife is demanded by the public." On the other hand, however, Zeno, Aristotle, Asclepiades, Thessalus, and Themison are all quoted as teaching that the diseases of men and women differ little.

Soranus illustrated his gynecology with pictures of the obstetric chair, of syringes, the vaginal speculum, etc. His book, written in Greek, and in a manner easy to memorize, was copied and recopied more or less perfectly for hundreds of years by monks and nuns who understood scarcely a word of what they were writing. Aëtius, in writing in the sixth century, classed Soranus as one of the four great masters: Rufus and Soranus, on gynecology; Leonidas, on surgery; and Philumenus, on drugs. He entirely omitted the far greater Galen.

Pliny the Elder, who was killed while watching the destruction of Pompeii in A. D. 79, mentioned one hundred and forty-six Roman and three hundred and twenty-seven Greek writers, most of them now only names to us because their works have been lost. Among them were several women writers, some of them authors of medical books.

Unfortunately, much of Pliny's own work has also been lost, and with it much information about these women which we should like to have. Such common names as Lais, Antiochis, Olympias, Aspasia, and Cleopatra occur again and again, and we wonder if some "Who's Who" will ever unravel the mystery of their existence. Pliny does, however (Bohn Lib. ed., vol. 4, p. 285) speak of Olympias, a Theban, as having written a valuable book of prescriptions, containing one chapter on the diseases of women, another on the prevention of abortions, and still another on the best way of causing an abortion if the latter is deemed necessary. He quotes some of her remedies for female diseases, such as (vol. 5, p. 360) hyssop and nitre added to bull's gall on a pessary or tampon to promote menstruation. She uses a purgative to cure sterility (vol. 5, p. 363); and is careful not to produce *prolapsus uteri* by her powerful mixture of goose-grease and mallows (vol. 4, p. 285), although at times the use of this remedy "may be essential."

Photius, a Byzantine prelate of the ninth century, mentions an Olympias of Thebes as an important woman doctor of the time of Soranus. Plutarch suggests that this is the Olympias who was the mother of Alexander the Great; but this is unlikely because, for one

thing, that Olympias was a specialist in poisons and their antidotes.

Pliny also tells us¹ of two Greek medical women, Laïs and Elephantis, who wrote on menstruation and abortion. Athenaeus, who flourished around A. D. 200, seems to corroborate this statement. Martial and Suetonius mention an Elephantis as a composer of obscene poetry. Inasmuch, however, as "Elephantis" was a common name in classic times, no less than six women of this name having come down to us, we may count it as at least possible that two persons of the same name have been confused. Soranus also mentions an Elephantis, who lectured on medicine, but who was herself so beautiful that, in order to keep the attention of her auditors on her subject, she was obliged to lecture from behind a screen. Of this Elephantis, who may have been the same as the one mentioned by Pliny, Laïs was a contemporary. Pliny says² that both "*vocatæ sunt sapientes elegantesque.*" Galen,³ however, seems to refer to them as contemporaries of Soranus. That there was an Elephantis, noted for her medical ability, at least seems to be clear.⁴

Pliny also mentioned Salpe, a native of Lemnos (Bohn Lib. ed., vol. V, pp. 300, 365, 369), as believing in the use of animal remedies such as testicles, marrow, the heart of a lion, the brain and tail of a camel, fat, dung, toasted earthworms, spiders' eggs for cavities in the teeth, dogs' milk, dried cicadas for colic, millipedes rolled into a ball and cooked in oil for earache, the liver of a mad dog as a cure for its bite, menstrual fluid as a cure for malaria, and urine mixed with the white of an ostrich egg for bathing sore eyes. Salpe was quoted by Athenaeus, A. D. 200, as a writer on women's diseases, a poet, and the leader of a sort of dinner club, the members of which met to eat and discuss interesting subjects. Pliny also mentions a Sotira as writing on the treatment of difficult menstruation.

It is not surprising that gossip was busy with the medical women of pagan Rome at a time when morals were at the lowest ebb and there

¹ In the Bohn ed., vol. V, p. 305.

² Schacher and Schmidius, "*De Foeminis ex arte claris,*" 1738.

³ "*De Compositione Medicamentorum,*" Lib. I, Cap. I, Sect. X.

⁴ Walsh, Dr. Joseph, *Medical Life*, vol. 35, p. 417, tells us that the midwives constituted a rather well educated class and attended female patients for other conditions as well as for their confinement. Galen was called into consultation as to the menorrhagia of the wife of Boëthius. He not only advised the medical women as to the treatment, but insisted upon giving her massage and using a certain ointment as an inunction in the groin.

was so much that was debauched and obscene. Tertullian (A. D. 150-230), hurled sarcasm at them for their use of speculums, tubes, hooks, dilators, and knives; but he, a non-medical man, could hardly have understood the proper uses of such instruments. The Roman ideas as to the viability of the fetus were those of today; and the physicians who lived up to the Hippocratic creed were careful not to do any harm, if they could not cure their patients. They had no scruples against saving the life of the mother by sacrificing the child, if a choice had to be made.

A gynecological treatise ascribed to a woman doctor named Cleopatra, and much used for many centuries, raises a number of problems. Exactly who this Cleopatra was, when she lived, or what her history, nobody knows. She appears to have been a contemporary of Soranus and Rufus, and to have either copied some of her materials from Soranus, or to have been the source of his materials, which last is at least probable. Her book was much used up to the time of Moschion in the sixth century. At that time it became confused with his work, and remained so until the sixteenth century, when, in 1566, what remained of it was rescued by Wolff and Spach, and published in their great volume "*Harmonia Gynaeciorum*," a collection of the works of many writers on gynecology and obstetrics, both Greek and Latin, published by Caspar Wolff of Trier. Of a later edition of the "*Harmonia Gynaeciorum*," published by Israel Spach, in 1597, H. A. Kelly says,¹ "Spach's volume is very valuable in that it has preserved many works now lost." Spach, himself, in his introduction, says that he wishes he could have done more justice to Cleopatra. He evidently reprinted everything of hers that he could find.

Theodorus Priscianus, court physician to the emperor Theodosius in 400 A. D., whose work is also reprinted by Spach, says that Cleopatra wrote her book for her daughter, Theodata, and that she drew its materials partly from her own experience, and partly from earlier Greek and Latin writers. Priscianus says, also, that there were two women named Cleopatra "in the time of Galen," one the gynecologist, the other a writer on cosmetics. It must be remembered, on the other hand, that women doctors in those days made "beauty treatment" a large part of their practice, so that it is not unlikely that the two Cleopatras of

¹ Kelly, H. A., *Johns Hopkins Hosp. Bull.*, 2: No. 18, 1891: Kelly says that Spachius was born in 1550, studied medicine at Tübingen, was professor at Strassburg, and died in 1610. His great book contains nothing of his own, but it includes many valuable books which are now exceedingly rare in the original form, and it is of great importance to the student of medical history.

Priscianus were the same person. Priscianus was evidently himself an admirer of women doctors, for he dedicated his own books to certain of his contemporaries who were medical women.

Another difficulty about Cleopatra arises from the confusion of her with the famous Egyptian queen of the same name, a confusion all the more likely because she dedicated one of her books to a sister named Arsinoë, and made other allusions in her work which have been interpreted as references to her own royal birth. Harless (pp. 123-127) quotes from Reinesius, Merklin, and others, regarding this point. Their conclusions are confusing, some of them identifying her with the queen of Egypt, others with a writer upon magic of a later date. Tiraquellus and Fabricius, however, believe that this Cleopatra was a very real person, a gynecologist who quoted somewhat clearly the ideas of Soranus, though not his words. Tiraquellus mentions a Codex in the Montfaucon library, "*Cleopatrae Gynaeceorum libri IV, a Sorano collecti*"; Piero Giacosa found fragments of her book in the Bibliotheca Angelica, the National library at Turin. In the latter was the dedication to her "*filia carissima Theodata*," and the signature "Cleopatra, Arsinoë's sister." Again, on the whole, and balancing all the evidence, it seems likely that Tiraquellus and Fabricius are right; that Cleopatra existed; and that she wrote the treatise bearing her name, which was used by midwives for centuries.

Another well-known medical writer before Galen was Scribonius Largus,¹ physician to the Emperor Claudius, and his traveling companion on the journey to his western colonies in France, Spain, and Britain, in A. D. 43. Scribonius made lists of the remedies found in use wherever he went, adding them to those already in use in Rome. He ascribes remedies to thirty-five men of great reputation, but he also quotes from five women of eminent families of the period, as having studied medicine, and as enjoying dabbling with drugs and trying their mixtures on the members of their households. Among these he mentions Messalina, wife of the Emperor Claudius, described by Juvenal as a female horror. It is thought that she studied with a lover named Vettius Valens, who was the founder of a new medical sect. Of an earlier date were Livia, the wife of the great Augustus; Octavia, the sister of Augustus; and Antonia, Mark Antony's daughter by Octavia.

¹ Scribonius Largus, "*De Compositione Medicamentorum Liber*," 1529. Also an edition of 1655 by Rhodion with notes, illustrations, and glossary, and an edition translated by Wilhelm Schonack, into German, 1913, dedicated to Sudhoff and Meyer-Steineg.

Typical of Messalina's contributions is this recipe of hers for tooth paste:

"Denn Messalina, die Gemahlin unseres Gottes, des Caesar, gebraucht folgendes Mittel: 1 Metze in einem neuen Topfe gebrannter und in Asche verandelter Hirschborner, 1 Unze Chiosischen Mastixharzes, 1½ Unze Ammonials." (Schonack ed. of Scribonius Largus, No. 60, p. 32.)

Guglielmo Ferrero, the well known Roman historian,¹ tells us that all the women of the time of Scribonius Largus were free to come and go, and study what they chose; and that the women of the nobility were especially well educated.

The sister of Augustus, Octavia, not only studied medicine and practiced in her home, but she encouraged the best physicians in their work and "invented many useful remedies." Octavia became the first wife of Mark Antony before he became enamored of the beautiful Cleopatra of Egypt. Scribonius Largus quotes from Octavia's book of prescriptions a remedy for tooth ache (Schonack, p. 32). It was made of barley flour, honey, vinegar mixed with salt, and baked, then pulverized with charcoal and scented with certain nard (or spikenard) flowers. She also recommended Messalina's tooth paste, and also another one made of ground glass and radish skin, and still another compounded of pellitory and ground bone.²

Of the remedies copied by Scribonius, a few are worth quoting. For ulcerated sore throat she gave a mixture of spikenard and honey with myrrh, saffron, alum, caraway seeds, celery, and anise seeds (Schonack, p. 36). A plaster (Schonack, p. 81), to draw out animal poisons contained orris root, the fat of dog's brain, milk of wild figs, dog's blood, turpentine, ammonia, wax, oil, and onions. For angina she used a mixture of ox-gall, pyrethrum, elaterium, honey, hyssop, and pepper. Scribonius says that this was almost strong enough to raise the dead. He gives us her remedy for sciatica (Schonack, p. 117), containing sweet marjoram, rosemary leaves, Falernian wine, and olive oil. This had to have several mixings, strainings, and heatings; then it had to be combined with wax and kept in an earthen jar for future use as a plaster. A variety of remedies were used to cure neuralgia. Scribonius says that he can testify to the value of the following prescription for intense pain (edition of Ruellius, p. 183): "Take lard or goose-grease, add wine, cardamom seeds, rose leaves, various nards and cinnamon"; but he does not say how this mixture is to be used. For a wonderful salve to soothe the pains of childbirth—"quite analgesic," Scribonius says it was—one

¹ Ferrero, G., "The Women of the Caesars," 1911.

² Schelenz, H., "*Geschichte der Pharmacie*," 1904, p. 165.

took lard and rose leaves, cypress, and wintergreen. They also prepared a famous ointment called *acopum*, to be used with "great friction," for pain in the back; while for the bite of a mad dog or for poisoned food, there was a remedy (Schonack, p. 81), containing iris root, castor bean, turpentine, and sal-ammoniac. This was to be kept in glass and used gently.

During the first and second centuries after the birth of Christ, there was more medical activity in the Roman world than ever before. Among the common people there was more opportunity for study, and more opportunity for medical work by women.

Photius mentions an "*honesta matrona*" who could cure epilepsy, sterility, and the diseases of elderly women. Witkowski¹ mentions a certain Marpessa who, while fighting in battle beside her husband, being taken with the pains of childbirth, was helped off the field, and delivered by a midwife named Lasthenia. Several ancient writers mention a famous woman doctor who, if we may judge from the words, "*muliercula*," and "*Africana*," was little, and from Africa. She became popular because of her remedies for pain in the eyes and abdomen. Scribonius Largus calls her also an "*honesta matrona*." One of her prescriptions, quoted by him, contained ivory dust (a treatment for epilepsy); another was made of crocodile's blood, and was prescribed for anemia in men, whereas dove's blood was used for the same disease in women. She, like Messalina, used the burnt horns of a stag mixed with spices for various complaints. Galen praised this remedy, saying, "*hoc medicamento muliercula quaedam Romae ex Africa multos remediavit*," and he adds that she sold it at so high a price that it was difficult for him to obtain it. The directions for compounding the prescription require five hundred words in the German translation.² Both Galen and Scribonius had studied at Alexandria in Africa; as had another contemporary of theirs, Aretaeus the Cappadocian;³ it is not impossible that the "little woman doctor" was also in their classes. All four followed the great Hippocrates, believing in simple remedies carefully prepared, and also in the humoral theory. Aretaeus, however, had a peculiar and original belief

¹ Witkowski, G. J., "*Accoucheurs et Sages-Femmes célèbres*," 1891.

² See Schonack's ed. of Scribonius, p. 61.

³ Cordell, E. F., "Aretaeus the Cappadocian," *Johns Hopkins Hosp. Bull.*, vol. 20, p. 371. It is worth noting that, although Aretaeus was from the Alexandrian school, and was living in Rome while Galen was working there, neither mentions the other in any remaining volume of their work. Twenty-two volumes of Aretaeus are lost, including what he wrote on gynecology.

concerning the uterus. He had an idea that the uterus has intelligence of its own, and that it moves up and down or right or left, of its own volition. He also thought that the brain is the seat of the sensation, the blood the food of the body and the transmitter of heat, the liver the source of the blood and white bile, the spleen the strainer of the blood and manufacturer of black bile, and the lungs sponges without feeling or importance. Scribonius, on the other hand, concerned himself not so much with anatomy and physiology as with drugs. His book became the first dispensatory. In it he describes 242 plants, 36 minerals, and 27 animal products, all more or less employed in his own time.

IX. THE SECOND CENTURY

LANCIANI¹ gives us a vivid picture of the sanitation of Rome in the second century, when the city had 800,000 inhabitants. The drinking water was contaminated, the sewers were clogged, and the burial of the poor was in great public pits along with the refuse and garbage of the inhabitants. He calculated that one pit, uncovered after two thousand years, must have contained 6400 bodies, the odor from which was "still a horrible stench." The rich were cremated and their ashes placed in columbaria. Varro, a Sabine (116-27 B. C.) in his "*De Re Rustica*," wrote that pestilences had raged in Rome, and that malaria was rampant during his lifetime. He thought that these diseases came from the marshy districts of the Roman Campagna where, he remarks with astonishing prescience, "insects prosper but are so infinitesimal that no human eye can see them or detect their presence." Where there was so much sickness there undoubtedly was a need for medical women as well as men.

Among the medical women mentioned by Galen are Favilla, Origenia, whose remedies for hemoptysis and diarrhea he praised; Eugerasia, who had a remedy for nephritis containing squills, bryonia, white pepper, cedar berries, iris root, myrrh and wine; Meurodacia (whom he calls *Maia*) perhaps a midwife; and Margareta, an army surgeon, a significant appointment. Galen mentions several prescriptions of women doctors which he found useful, one prepared by Samithra and another by Xanita, that of the latter being like a Dover's powder in composition. That women had most of the gynecological practice appears likely. Galen fails to mention a woman as a patient except in consultation.

¹ Lanciani, op. cit. p. 104.

Metrodora, mentioned sometimes as a contemporary of Soranus, wrote a Greek treatise on diseases of the uterus which, in a manuscript of the twelfth century, is still in existence in the Laurentian library in Florence. Sarton (p. 283) says that nothing is known of her except that she wrote this treatise, "which seems quite valuable," and he adds that it is probably the oldest extant medical treatise composed by a woman. It consists of 263 pages on parchment, divided into 108 chapters; deals with diseases of the uterus, stomach and kidneys, and contains many valuable prescriptions for these diseases. Harless (p. 130) suggests she may have been a man, but for no reason apparently except that there was also a Metrodorus, a man doctor.

The famous Galen himself, physician to Marcus Aurelius, was the greatest medical writer after Hippocrates. Up to the seventeenth century, his works were used by every school of medicine. He was born in Pergamon, in Asia Minor, A. D. 129, and lived until A. D. 201. His medical books were never seriously criticized by the Church even after it became the dictator in politics, religion, and medicine, and this notwithstanding that Galen lived and died a pagan. Vesalius and Paracelsus, in the sixteenth century, were the first to refute certain of his statements about anatomy. To the emperors of his time, however, he was the oracle of all medical wisdom. His special interest was a medical school on the Esquiline Hill near the palace and gardens of Maecenas. This school is also of interest to us because one of Galen's colleagues and friends at this school was a woman doctor named Antiochis, a specialist in diseases of the spleen, in arthritis, and in sciatica; and concerned for the preservation of female beauty. Galen is recorded to have copied her prescription for a plaster to use in dropsy and sciatica, another for pains in the chest, and one for gout in the feet. There has been some confusion as to the identity and date of this Antiochis of Galen's time, for the reason that there was also a woman doctor of the same name in the time of Heraclides of Tarentum, in the first century B. C.¹ It was probably to the Antiochis of the second century that the town of Tlos in Asia Minor erected a monument which reads as follows: "Antiochis, daughter of Diodatos of Tlos, the Council and officers of the town, in appreciation of her medical ability raised this statue at their own expense."²

We should now speak of a Greco-Roman woman doctor of this

¹ Clericus, "*Hist Med.*," p. 434, on the authority of Asclepiades, Lib. IV.

² Lipinska, M., "*Histoire des femmes médecins*," 1900, p. 58.

period named Aspasia,¹ known to us only by fragments of her work quoted by Aëtius in his great four-volume cyclopedia, the "*Tetrabiblion*."² In this work Aspasia was praised by Aëtius for her great skill in podalic version, in the diagnosis of fetal positions, and in her treatment of dysmenorrhea. In one chapter he quotes her method of managing difficult labor; in another chapter he tells how she provokes the death of the fetus when necessary; and another chapter is on the treatment of suppressed menstruation. Speaking generally, Aspasia seems to have tried to impress her pregnant patients with the necessity of being extremely careful not to cause abortion. They should not take chariot rides over rough ground, nor exercise violently, nor worry needlessly, nor carry heavy loads, not eat spicy and indigestible foods, nor be bled. Instead they should be happy, live quietly, eat sparingly, and take mallows, lettuce, barley juice and such simple medicines for constipation. At the time of labor they should have hot drinks, hot sitz baths and call the obstetrix.

The contributions of this Aspasia seem so significant that it may be worth while to quote them at greater length.³

In the opening chapter of the "*Tetrabiblion*," Aëtius⁴ discusses generation, pregnancy, sterility, labor, the anatomy of the uterus, and menstruation, the latter classed by Aspasia as a "purgation." She notes that its painlessness depends upon food, exercise, diseases, etc. As to the desire for strange foods during pregnancy, its nausea and swollen feet, Aëtius gives, in each case, almost a chapter of quotations from Aspasia.

In Chapter XII he quotes her as to the prevention of abortion, the necessity for the patient to avoid violent exercise, hard falls, eating indigestible food, and constipation. She advises laxatives such as rhubarb, lettuce, dock, mallows, etc.

In Chapter XV she treats of difficult labor when the introitus is narrow, her treatment being the application to the vulva of hot lotions made from olive oil, mallows, flax seed, the oil from a swallow's nest, herbs, etc. If the placenta is adherent the patient must close her mouth and nostrils and force it out! To prevent conception wool tampons

¹ Baas, "*Grundriss der Geschichte der Medicin*," 1876, p. 72.

² Aëtius of Amida in Mesopotamia (A. D. 527-566) wrote in Greek but his "*Tetrabiblion*" was translated into Latin and later printed by order of Pope Clement VII, in 1534. It fills 2000 pages in double columns.

³ Peter Baily says that there were three Aspasias, one the wife of Pericles, another famous at the time of Artaxerxes, and a third, the one quoted by Aëtius, "who practised in old times." Some think there was a fourth Aspasia, of unknown date, whom Aëtius himself mistook for the earlier one.

⁴ Aëtius, Amideus, "*Medicæ artis principes post Hippocratum et Galenum*," 1534.

soaked with a preparation of herbs, pine-bark, nut-galls, myrrh, wine, etc., are to be placed in the vagina. This treatment is to be used in case it is dangerous for the patient to become pregnant, not otherwise.

In Chapter XVIII are directions for causing abortion; on the thirteenth day after the date of missed menstruation the patient is to be hauled and pulled by several people and jerked about, or she must lift heavy burdens, use high douches of strong herbs, take hot sitz baths, and drink a tea of rue, artemisia, oxgall, eleterium, absinthe, and violet roots. She must have poultices on the abdomen. On the fourth month the child will be dead, and labor will commence. After labor the patient is to be bled profusely.

In Chapter XXV, Aspasia gives the following advice: After the removal of a dead fetus the patient should have soft foods, injections, purgatives, but avoid hot drinks. The pubes and vulva are to be anointed with oils, and, if fever appears, astringent foods are to be given, and she is to be bled freely. Aëtius in this chapter quotes other writers on the subject of sterility, the care and treatment of the breasts, and surgical operations.

For suppressed menstruation Aspasia and Rufus¹ both advise examining the patient to see if the uterine os is closed or can be stretched; if the opening is enlarged by cutting it must be kept open for fear of contraction. Soranus of Ephesus of the second century is also quoted as advising Cleopatra's treatment for menorrhagia and prolapsed uterus by tampons. He says that a prolapsed uterus may have to be removed by surgery, but this is so dangerous that a tampon and belt, with rest in bed, are safer.

In Chapter LXXVII Aëtius quotes Aspasia again as to the treatment of malpositions of the uterus. These are due, she says, to the veins from the liver being so full that the weight of the bowels and flatus push the uterus away from its usual place. Her treatment is by tampons of tar or bitumen or hot oil. She replaces the uterus with her fingers. If there is suppression of the urine she says it may be necessary to make an artificial opening into the bladder. An enlarged uterus is to be scarified and tamponed. Operations to remove uterine tumors, and even peritonitis, seem to have had no terrors for these authors.

In Chapter XCII Aspasia gives rules for treating noma of the uterus by the milk of a horse or ass; the patient's hips are to be elevated and

¹ Rufus of Ephesus was a contemporary of Soranus of Ephesus. They lived in the first part of the second century A. D., and were contemporaries of Aspasia.

a tea of iris root, with absinthe and mallows, is to be poured into the vagina.

In Chapter XCVII she treats hemorrhoids of the uterus by surgical methods, followed by tampons of mallows, red-earth, rose-water, the juice of mandragora, hemlock, etc., according to the rules of Hippocrates, adapted by herself.

Chapter C is on surgery. Aspasia dissects and replaces the intestines for hernia, closes the wound with two or three sutures, and advises against the use of wet dressings.

In Chapter CII she treats varicose hernias by resection, separating the adherent membrane and sewing it to other parts of the sack.

Chapter CVII, on condylomata of the vulva, explains how Aspasia softened them by hot fomentations and astringent salves.

We can only regret that the writings of Aspasia as a whole have not come down to us; for it is evident from the above quotations that she was a highly intelligent surgeon and obstetrician, indeed quite the equal of any man of her time. Aëtius must also have seen the work of Cleopatra on obstetrics and cosmetics, for he quotes from her at great length. He makes the mistake of calling her Queen Cleopatra, but this was perhaps excusable. In any event we are grateful to him for the records he rescued from oblivion.

One strong evidence both of the existence and of the popularity of women doctors is to be found in the legends on their tombstones. This is as true in the Roman world as it was in Greece. Some of these gentle reminders were erected by patients to their doctors; others were set up by husbands to exemplary wives who were medical women; others have merely a name followed by the Christian refrain, *in pace*. In the "*Corpus Inscriptionum Latinarum*," Lanciani found the names of literally hundreds of physicians, both men and women, and belonging to the great families. He mentions Julia Pia, Minnia, Torentia, Venuleia, for example, "who attended women in confinement."

Among the inscriptions¹ that may have dated from Greco-Roman times are the following: *Sallustia Q. L. Merita*; *Marcia L. Agrippinae Opstrix*; *Julia Liberta Sabina, Minucia Medica*, which may be translated, "Julia, a Sabine woman, the freed slave of Minucia, a doctor." There is another² which reads: *Helpis Liviae ad Valetudinem*. Another³ is: *Secunda Livillae S. Medica*. Another,⁴ from Verona, reads:

¹ Gruterius, Janus, *Inscriptiones Antiquae*, 1707.

² Spohr, "*Miscel. antiq. erudit.*"

³ Quoted by Le Clerc and Jeanne Chauvin.

⁴ Quoted both by Gruter and Rhodius, "an elegant monument to a woman doctor."

C. Cornelius Meliboeus, sibi et Sentiae. Elidi Medicae Contubernali, (his companion). Another ¹ is from Urbino: *Deis Manib. Juliae Q. L. Sabinae Medicae. Q. Julius Atmeius conjugi bene merenti*. Another: *Forella T. L. Melamona Medica a Mammis* (from a collection by Walch). From Nîmes in southern France² comes this: *Flaviae Hedonae Medicae Ex T.* The following comes from the fountain of the Trevi,³ in Rome: *Minucia C. L. Aste Medica*. Also this⁴ is from Rome, to a priestess doctor: *Secunda Livillae S. Medica, Ti. Claudius Caesaris. L. Celer. Aedituus A. Vesta*. In the *Corpus*⁵ collected by J. K. Bailie (1846), we find (vol. II, p. 94) one in Greek to Casilontis, a medical woman: *Sonatotheke Kasilontos Trines*. In Gruter there are several epitaphs to nurses, such as this one: *Cassia L. L. Zmytha, nutrix, V. A. XXIX* (Gruter p. DCLX, no. 2); and this from a nurse to her little patient: *D. M. S. Emilii. Nisi Vixit. Mensib. XI, Fecit Valeria Hygia, Nutrix*. Gruter also gives several epitaphs to obstetricians, such as this: *Antoniae. Aug. L. Thalassae, Opstetric, (p. DCLXXXVI, no. 5)*. And another (p. DCLII, no. 10) from Rome: *Sex Pompeius Sex. L. Daphnis Gram Chloe. Pompeiae Appi. Obst.*; and this: *Atia Dynamis Obst.* And (no. 4) found at Tibur: *Mariae C. et Suavitate L. Agrippinae. Obstetrici*. There is still another (D. C. XXXVI, no. 6): *Salustia, Q. L. Imeria Opstetrix, Sallustius Q. L. Artemidorus Arescusa, Fecit*.

It must be noted that none of these epitaphs come from Christian tombs, and that many of them offer some difficulty in translation. Taken as a whole, however, they show that in the Greco-Roman period there were women doctors, as well as nurses and obstetricians; and that all these various sorts of medical women were in good standing.

Before closing this chapter on the Greco-Roman period in the history of medicine a hasty review or summary of the medical treatment, the hospitals, and the schools may be worth while. We have seen that there were several medical sects, each with its schools and teachers, culminating in the great school of Galen, which in one form or other, but always based on Hippocrates, lasted for hundreds of years.

¹ Quoted by Scribonius Largus, and also Gruter, p. DCXXXVI.

² Gruter, vol. I., p. CCCXII.

³ Gruter, vol. I., p. CXXXVI.

⁴ Gruter, vol. I., p. CCCXII.

⁵ See also Bailie, J. K., "*Fasciculus Inscriptionem Graecarum*" (1842-1849). See also Henzen, Wilhelm, et Rossi, J. B., "*Inscriptiones Urbis Romae, Latinae*," (1876-89), and Hübner, "*Inscript. Hisp. Lat.*" (1869). Also Nunn, H. P. V., "Christian Inscriptions," 1920.

We can almost imagine Nero fiddling a tune to the names of the drugs mentioned by Dioscorides, his physician, so mellifluous do they sound; belladonna, helleborus, aconitum, and many others. Pliny and Dioscorides have given us lists of more than six hundred plants used in medicine along with many disgusting and loathsome animal remedies given for a purely psychic effect. These lists were copied and, what is worse, used by physicians for sixteen hundred years. We shudder today at the remedies praised by Pliny, the spider's eggs, dog's milk, dried cicadas, millipeds rolled into pills, animal's dung, and others equally filthy and useless; but at the same time we are more or less amused at the absurdity of a host of other so-called remedies. With a pill of reseda, or mignonette, for example, the patient must spit three times and say, "Reseda, allay this disease! Knowest thou not what chick hath torn up these roots? Let it have nor head nor feet."¹ To cure catarrh, tie two fingers together for a while. To heal a sore, take the roots of asphodel, hang them up in smoke to dry and the sore will be healed. To cure toothache, dig up a root of erigeron, spit into the hole, touch the tooth with the root, spit again, replace the root in the hole and the pain will vanish. To beget a black-eyed baby, eat a rat. For easy parturition, let the husband or lover tie his belt around the patient and then quickly remove it. The baby will be born speedily. Diseases of the uterus will be healed by wearing the milk-tooth of a child on a bracelet. The tongue of an eagle, worn as an amulet, cures cough. For styes on the eye, cut off the heads of a few flies and rub the eyelids with their bodies. For pain in the bowels wash the feet and then drink the water. A few little bugs found in the body of a spider, if bound to the flesh of an over-fecund woman, will prevent her conceiving for a year. To keep the hair from falling out impale fifteen frogs on bulrushes, etc. It is a relief to know that Galen rejected many of these remedies of Pliny, such, for example, as these: frog's blood rubbed over plucked eyebrows will prevent the hair from growing again, and a bath of viper's blood will remove hair from the arm-pits. Pliny had told his somewhat skeptical nephew that these remedies must be good, for he had consulted two thousand books and one hundred reliable authors for them. Probably Dioscorides had done the same in order to write his six volumes on *materia medica*. It is interesting to note that some of these old remedies are still used. Worm oil, cobwebs, urine and dung are still "medicine" to many foreigners in America; while among the Siamese seven bedbugs

¹ Thorndike, Lynn, "Magic and Experimental Science," vol. I, p. 23.

wrapped in skin and swallowed are supposed to cure malaria, and roast grasshoppers are "good for" other diseases.

We have seen that women doctors taught medicine, cared for the patients at the dispensaries, performed operations, and were the chief, or the only, obstetricians. Horace said that "their rewards were good, though gained at the price of fatigue," and, we may add, of near oblivion. They had slaves to roll their bandages, mix their pastes and poultices, and brew their herbs. If women doctors were employed in private families they were valued highly; and if they were slaves they brought the highest prices in the market, even as much as sixty pieces of gold. It was their duty to care for the children in the orphan asylums, one of which in the time of Trajan had five thousand waifs. And they had charge of the women in the private hospitals on such great estates as those of the emperors Hadrian (A. D. 117-138) and Antoninus Pius (A. D. 138-161), and Marcus Aurelius (A. D. 161-180), all of whom built very comfortable and sanitary hospitals for their guests, their servants, and themselves. Celsus complains that these private hospitals were better than those for the general public, and Lanciani says that the cooks of Augustus fared better when ill than many of the wealthy people. Certainly in sickness a woman doctor of the day, having practical and educated common sense, however much her medical knowledge may have lacked scientific basis, was better than a Pliny, with his indiscriminating collecting of remedies, a Musa with his fads, a Celsus with his purely literary instincts, or the men quacks whom Martial and Juvenal mocked.¹

In comparison with the medical women of today there may have been in classic times as many women writers in proportion to their numbers as now. But women doctors, with their multifarious duties, seldom write medical books unless they have something new to say or have a gift for literary work. It is one's every-day work that really counts in the world. Sir Auckland Geddes² has said that much of the work of the medical profession is not man's work, and that consequently the majority of its men members with difficulty find inspiration in their daily rounds. He adds further, "Unconsciously women possess

¹ For references in connection with these statements see the following books: Walsh, Joseph, "The Second Galen," *Medical Life*, Sept., 1930.
Pater, Walter, "Marius the Epicurean," 1885, pp. 108-174.
Cumston, Charles Green, "Introduction to the History of Medicine," 1926, p. 180.

² Geddes, Sir Auckland, "Social Reconstruction and the Medical Profession." Contributions to Medical and Biological Research, dedicated to Sir William Osler, 1919, p. 78.

that sense for the future which is the essence of the emotion of human betterment." But women lose their own identity in their professional life unless they publish some new and startling discovery; and invention and discovery are not common feminine qualities.

Chapter II

The Medical Women Of The Early Middle Ages

I. MEDICINE IN THE FIRST CENTURIES OF OUR ERA

THAT the female conscience, and woman's naturally altruistic instincts for social service, have always been strong, needs no more proof than the history of the women in medicine as we have found it in the ages before Christianity. We have seen that, from the earliest times, the words "priest" and "physician," and "priestess" and "woman doctor," were often synonymous. We might wish that the "wise woman" of primitive peoples had had more knowledge of medical science; for primitive medicine consisted mainly in pummelings and sweatings and sacrifices to the gods, followed by bleedings and purgings, with the alternative, or substitute, of journeys to holy shrines. The primitive surgery with flint knives and bone needles was faithfully followed by exactly the same operations with bronze or steel instruments. There was little new invention, no careful study of the action of drugs.

In any event, as a rule, in no country except that of the Hebrews and, during certain periods, among the Greeks, did women hold medical positions much inferior to those of men, and even among the Jews their inferiority was not pronounced until near the time of Christ. During the Middle Ages, the feeling of feminine inferiority was intensified by the Church, and the education of women was more or less neglected. Considering, however, the sterility of much of the education of the Middle Ages this was not, so far as women doctors were concerned, an unmixed ill. Women were usually closer to their patients than men. With their love for detail and their sense of pity for the sick and feeble they turned to the practical side of medicine; they wanted only to prescribe intelligently for their patients, and to nurse them with gentleness and skill.

In investigating the work and industrial conditions of medical women down the ages it is, naturally, impossible to find any sharp line of demarcation between one century and the next. Especially is this true of the Roman Empire just before and after the birth of Christ. In fact, during the first four hundred years of Christianity, there was very little change in the manners and morals of men and women under Roman rule. Neither the story of art and literature nor of wars and religious persecutions is the whole story of humanity, nor is the lack of biographical record any proof of the lack of important personages during any century. Because the early Christians kept no adequate records, as far as we know, of their medical women, is by no means proof that there were none. On the contrary, from such scattered scraps of evidence as we have, it is safe to assume that there were women practitioners during this period, and that some of them were probably quite as learned as the average medical man of the day.

If we think of the first centuries of the Christian era as wholly dark with wars, pestilences, and immorality, we overlook their brighter side, and miss the happiness of the little band of Christians, cheerful even in the midst of their persecutions, although perhaps Gibbon exaggerates when he says that the centuries between Nero and Diocletian were the happiest and quietest of the Middle Ages. From a woman's point of view, a declining birth rate, and an ever increasing death rate, and the suffering and torments of the victims of religious persecution are not marks of a happy age.

We may reconstruct something of the home life of the Roman in the early centuries of Christianity. The marble palaces of the rich were built around open courts in which there were fountains, or statuary and flowers; the walls were decorated with paintings, the furniture costly and comfortable. The costumes of these patricians were artistic and elaborate, of silk or linen or fur, and they ate imported foods from gold or silver or glass dishes. The homes of the poor, on the other hand, could not have been very different from the homes of peasants in Greece and Portugal and the hill-towns of Italy in the nineteenth century, cheerless, built of native stone or clay, mere huts with straw roofs, earthen floors, and a hole under the eaves for the escape of smoke. Their beds were mats or boughs laid on the floor. Their cooking in fair weather was done over charcoal, out-of-doors. There were no windows or chimneys. Their clothes were of the coarsest of home-spun wool. They went bare-footed, and they ate black bread, goat's-milk cheese,

onions, wild honey, and fruits in season. If they were slaves, each was carefully taught to do a special kind of work. We must remember that many of the Roman patricians in pagan times were exceedingly kind to their slaves, and sometimes freed them as a reward for their intelligence and faithfulness. Some of these slaves were so well educated that they saved their owners all care and responsibility.

It was one of the chief interests of some of the rich to keep scribes and copyists continually at work augmenting their libraries, an interest for which we today may well be thankful; for, of all the medical books copied during the first two or three centuries, A. D., mainly in Greek or in translations from the Greek, all the originals have been lost. We have no way of finding out, of course, how accurate the extant translations and copies are. Many of the great libraries of Rome were burnt at one time or other; repeatedly copies were made from copies; errors were repeated from copy to copy, while, with each re-copying, new errors crept into the text.

In no age was immorality more common. Abortion was technically illegal, but everywhere performed. Sexual license in men was condoned. Medicine, naturally, took somewhat the color of its time; but in a professional environment created by men like Galen and women like Aspasia conditions could not have been wholly bad, even at a time when social immorality was at its worst. We read that there was a "midwifery atmosphere" at that time in Rome, and therefore, whether with babies or abortions, the "*obstetrices id est medicae*" were of course busy. We know that Aspasia, Cleopatra and Metrodora were writing earnestly of the dangers of abortions, even while Juvenal was scoffing against the immoral midwives who constantly produced them. It is true, of course, that many of the midwives of the period called *sagae* (the *sages-femmes* of the French) made abortion their main practice. These *sagae* had many extraordinary remedies for amenorrhea, as well as love philters and aphrodisiacs. Among the latter were the vaginal secretion of a pregnant mare, and the roots of plants that looked like the sexual organs. Julia, the daughter of the emperor Titus, died from an abortion. Fathers gave away unwanted babies, and had their sons castrated for mere whims. Pliny, Horace and Ovid all tell astounding tales of the lack of chastity among the people of Rome of their time.

The real woman doctor and trained midwife, the *obstetrix id est medica*, refused to be classed with the *sagae*, or abortionists, against whom legislation was always active. Moschion, in the sixth century A. D., has

given us his idea of a true obstetrician, in words quoted literally from Hippocrates, who lived nearly a thousand years earlier. She should, he says, be highly intelligent, very studious, physically strong, have self-control, be moral, quiet and prudent.¹ Martial makes no distinction between the woman doctor, the gynecologist and the obstetrix, evidently considering them as one and the same, but even he distinguished between nurses and *sagae*.

The profession of medicine, however, was so well paid that even quite uneducated people hung out their signs as doctors. As Martial puts it, "*quisque medicus sive masculus, sive femina*" could obtain a permit to practice. Oribasius (A. D. 326-403), felt that conditions by his time had become so bad that he proposed all boys and girls in school should have six months' teaching in medicine, both to fit them somewhat for the care of the sick, and also to make them at least able to discriminate between impostors and real physicians. Oribasius also advocated having the drugs in an apothecary's shop labelled so that every man could be his own doctor. The amount of hocus pocus during these centuries was almost incredible. Temple sleep had been revived. Priests and priestesses were pretending to cure such a disease as tuberculosis with pine-cone powder in honey, and to draw out the sting of a viper by means of a stone taken from the grave of a young girl.

Rome, in fact, in the early years of Christianity could not be compared medically with Athens in the time of Hippocrates,² and surgery was more carelessly done than in the time of Augustus. Osler, in his *Bibliotheca Prima*, no. 31, tells us that Antyllus, A. D. 250, was the first modern surgeon to resect bones, repair fistulae, or enucleate cataracts, which means that the two hundred different kinds of surgical instruments, such as those found in the ruins of Pompeii and used in the first century, must have lain more or less unused for two hundred years. Jeering at quacks, Martial remarks that Symmachus takes his pupils with him to the bedside of his patients, sometimes a hundred at once, with the result that, if the patient had not been feverish before, he would be after a hundred had examined him with their cold fingers! Evidently Martial and Juvenal, like Molière at a later age, were aware of the sensitive spots of their contemporaries. Juvenal says that, whether a man were

¹ Von Siebold, Eduard Caspar Jacob, "History of Obstetrics," 1839, p. 156, quotes Moschion in these words: "*Quid est obstetrix?*" and the answer is, "Every woman is an obstetrix who is learned in the diseases of women and is called upon to cure their diseases by the art of medicine."

² Withington, E. T., "Medical History from the Earliest Times," 1894.

an eye doctor or a gladiator, he went about his business in the same manner; and again, he asks "How many patients did Themison kill in one year?" the reply being, "As many as there are infirmities in an old man." In another place he takes a fling against the abortionists:

"Poor women will bear children, and by stress
Of circumstance feed them more or less,
But you will never find expectant mothers
In gold-embroidered beds. The midwife smothers
The hope of life within them, that's her trade."

From Martial we pick the following:

A doctor once, Diaulos now
Prepares men for the grave.
A prudent man, he reaps the fruit
Of all the drugs he gave.

(Book I, XLVII transl. by F. W. Nicolson)

and another:

He bathed and supped with me—how bright he seemed;
Next morn they found him dead. What fell disease
Slew him so suddenly? Alas he dreamed
That by him stood the quack, Harmocrates.

(Book VI, LIII, transl. by Wright).

Although Martial and Juvenal made fun of quack doctors and impostors, their tribe continued to increase. A generation after Juvenal, Quintus Serenus Samonicus (put to death A. D. 211 by Caracalla), invented all sorts of magical words to be used as or with medicines. The word *abracadabra*, for instance, written on parchment in a cone shape which left off one letter in each line, was a cure for any disease, if the parchment were worn suspended from the neck for nine days. In other cases the patient was told to throw a piece of parchment containing this charm into a running stream, or to boil it with medicine; sometimes its use was to be accompanied by a formula repeated fifty times. Sometimes the charms were written in rhyme for easy memorizing. Whatever the trick, Samonicus got rich by his system. Perhaps "Every day, in every way," etc., originated with him!

Besides Samonicus there was a Crinas of Marseilles, who claimed to cure patients by appealing to the stars for their benefit. It was said that he became so rich from his practice as to be able to pay for a war! Lucian, a contemporary of Galen, who died A. D. 200, agrees that many of the medical teachers of the day were profane, impudent boasters. On the other hand, a few were, like Galen, well trained and honorable. Certain "*obstetrices id est medicae*," says Lucian, were officially appointed to determine pregnancy in doubtful cases, or to determine the paternity of foundlings.

II. MEDICINE IN THE THIRD AND FOURTH CENTURIES

SUCH, then, were the conditions of medical life and practice at the time of the death of Galen, the beginning of the third century after Christ. It is worth noting that in none of his works that have come down to us does Galen mention the Christians, or any other religious sect. He was himself a Stoic. He belonged to no medical cult, neither Methōdist, Empiricist, nor Dogmatist, but he did believe in the humoral theory, in the teachings of Hippocrates, and in himself. He is said to have written nearly five hundred treatises, half of them on medical subjects; but of them all only eighty-three have survived. Galen happened to have been unable to devote as much of his attention to surgery as to medicine; and, so powerful was his influence in succeeding centuries, this almost fortuitous bias in his emphasis resulted in relegating surgery to women and barbers for more than a thousand years. He taught that the four humors of the body were welded to its four vital spirits; and this theory controlled medical thought until the seventeenth century.

These first centuries of the Christian era were, Gibbon says, the calm before a storm. The government of the Roman Empire was becoming more and more unstable, for taxes were hard to collect, work in the cities was scarce, morality at its lowest point, and pestilences stalked unhindered. Galen himself fled from Rome during the plague, but he was hardly better off in the Campagna. Famine forced the common people to desperation while the rich gave themselves up to debauchery of all kinds. As the Christians increased in numbers the Emperors became more and more fearful of them, hence persecutions of them multiplied. But the more they were persecuted, the more they increased in numbers. With them the position of women was quite as good as that of the men, for St. Paul had said that all should be "brethren." Phoebe, the deaconess, was his physician, "a succourer of many and of myself also." Other women were practicing medicine; others preached, baptized converts, and even performed the duties of priests. St. Paul seems to have had two women relatives in Tarsus who were Christian doctors, St. Zenias and St. Philomela, the "lady with the lamp"; and in a letter written by Amianus to St. Paul we again find mention of the obstetrix or woman doctor in this statement, "*Quoties de mulieris praeagnatione dubitatur, quinque obstetrices, id est medicae, ventrem jubentur inspicere.*"¹

¹ Chauvin, Jeanne, "*Étude historique sur les professions accessibles aux femmes,*" 1892.

Tertullian, even while he praised the faith of some of the early women martyrs, wrote that they must be even more humble, and "make no parade of their humility to be seen of men," i. e., they must keep out of sight as much as possible. If a woman were a widow he would consent to her second marriage provided she would convert her new husband to Christianity; for, he adds, "It is because of what you, Eves, did for us, as unsealers of the forbidden tree, that the Son of God had to die." Having thus satisfactorily put the blame where he thought it belonged, he both scolded and admonished those of his hearers who were medical women, for he had ideas on birth control, he knew that the population of Rome was steadily diminishing, that abortions were common, and that certain women made their living by causing miscarriages. He hurled invectives against the whole class of midwives and women doctors in such words as these: "If a child is extracted dead it verily was once alive. It is your tubes, your speculums, your dilators and hooks that are to blame for causing this destruction of the fruit of the womb." Whether we agree with him now or not, we may at least thank Tertullian for giving us this description of the instruments used by the obstetricians of his time.

Art, literature and medical knowledge all were slipping steadily backwards in this third century. The soldiers in some of the far away provinces set up governments of their own, took barbarian wives, and were ready to resist compulsion from home. Zenobia, in her oasis at Palmyra, defied the Roman legions for years for "she knew all science, history, and military art"; but she was finally conquered and taken to Rome in A. D. 273, to complete the triumph of Aurelian. Her daughter became his queen, and in the next generation Zenobia's grand-daughter became queen of all Persia. She introduced Greek medicine into her adopted country, and protected the doctors and teachers in the new medical school founded at Edessa. Indirectly, this helped to save Greek medicine to the world, for the successor of this school at Edessa became the great school of the fifth century at Gondashapur, with its medical library, its famous teachers and its Arab writers.

But wars and plagues and persecutions took a tremendous toll in lives and property during the third and fourth centuries. When Diocletian ascended the throne, in A. D. 284, he increased the persecution of the Christians at an almost unbelievable rate. Many of the martyrs were medical men and women, Saint Theodosia and Saint Nicerata, Saint Cosmas and Saint Damien of Asia Minor, Saint Thekla of Seleucia, and Saint Fides of Conques being among the number. If we are to believe tradition, however, after the death of these saints more miracles

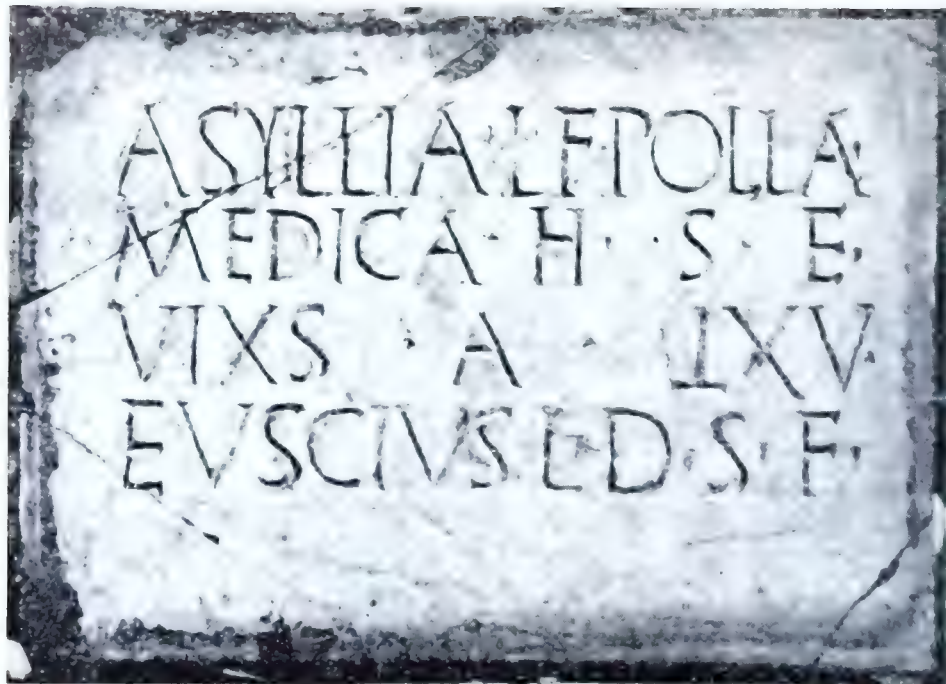
of healing were performed at their shrines, or by means of their bones, than were ever done by them in the flesh. We are told that Saint Fides was only a little girl of twelve when she was martyred; but there is evidence that Saint Theodosia, the ancestor of Saint Procopius¹ of Gaza (A.D. 465-528) was a well educated physician, for her fame as a doctor and surgeon long outlived her death.

Christian women were not the only women practicing medicine in these early years. We have already mentioned Aspasia and Cleopatra, pagans both. We know that the wife of Antoninus Pius, Faustina, founded public hospitals as well as hospitals for her slaves and guests; and was greatly interested in the study of medicine. Julia, the wife of Septimius Severus, was also active in promoting medical charity. It was for her that the life of Apollonius of Tyre was written. Lanciani tells us that, even before the time of Fabiola, who is often mentioned as the first woman to build or equip public hospitals, there were several such hospitals in Rome and throughout the Empire—hospitals for bakers, for pilgrims, for those afflicted with diseases of the eyes, for apothecaries, and others, hospitals built like palaces, their windows facing the sun.

Fabiola, who died in A. D. 399, was converted to Christianity at the age of twenty; she was married a second time; and became a widow again not long after. In order to expiate the crime of her second marriage and her early frivolity, she followed the teachings of Saint Jerome (A. D. 331-420), her friend and correspondent, and devoted herself to a life of medical charity not only in Rome but in the Holy Land. She was both a physician and a nurse, and Withington (*op. cit.*, p. 10) says that she was also somewhat of a surgeon.² None of her contemporaries ever referred to her as one of the "*parabolani*" ("nursing attendants"). Her life in Rome during the persecutions of her friends must have been a harrowing one. Cardinal Wiseman, in 1854, after a long study of the early Christians in Rome, wrote the story of her life. Saint Jerome, writing to a friend about the work of Fabiola and other Christian women, said, "The Gentiles themselves never took account of the sex of their women but of the degree of their intelligence..... Volumes would be necessary to recount the lives and deeds of these women." He had only praise for those who, like Fabiola, were untiring in their devotion to the sick and needy. He tells us that among

¹ Schacher, Polycarpus F. et Schmidius, Joannes Henricus, "*De Feminis Ex arte Medica claris*," 1739, p. 49. See also Nicephorus, Book VII, Chap. XV.

² Nutting, Adelaide, and Dock, Lavinia L., "History of Nursing," 1907, vol. I, pp. 125-134.



EARLY GRAVESTONE OF A WOMAN PHYSICIAN.

The word "Medica" is clearly readable. This inscription is on a stone found near Tunis. Christian; probably about the 3rd century, A. D.



TOMB OF A WOMAN PHYSICIAN AS "MATER ESCULAPIUS"
4TH CENTURY.

From Spalato, on the Adriatic. Her figure surrounded by her patients, is at the left of Christ, the Good Shepherd. The cover is from a much earlier tomb.

the wealthy patricians on the Aventine Hill there were "three quiet Christians," Fabiola, Marcella, and Paula, who were reading Homer in Greek, studying Hebrew, singing hymns and praying, and constantly visiting their patients. Marcella ultimately became a hermit like Saint Anthony and Saint Jerome, Paula settled in Bethlehem, and Fabiola lived in Italy, and opened hospitals in Ostia, at the mouth of the Tiber, and in Rome.

Saint Jerome gives us the names of fifteen other women of his time who had studied medicine and were devoting themselves to the care of the sick, without fees. Lanciani¹ tells us that the palace of Marcella, on the Aventine, was one of the largest, and that its ruins were discovered by him in 1903, almost fifteen hundred years after its destruction by Alaric. He says also that Fabiola was converted by Marcella, and that hers was the first hospital to be opened and "the best of its kind." *"Prima Fabiola nosoxomeion instituit in quo aegrotantes collegeret de plateis et consumpta languoribus atque inedia miserorum membra foveret."* A later writer says of her, "Few physicians had so much moral or intellectual ability as she, so serious without pedantry, simple but not vulgar, quiet but deeply thoughtful." Saint Jerome says that the patients whom she gathered from the gutters were dying in agony, covered with sores, their eyes blinded, limbs mutilated, their whole being reeking with disgusting smells. She herself died in A. D. 399, mourned by thousands.²

Paula, the friend and colleague of Fabiola, was born in A. D. 347, a "descendant of Agamemnon." She was an expert scholar of Hebrew, and, on becoming a widow, she and her daughter settled in Bethlehem, where they founded a hospital and monastery for the Jews, and served them untiringly. Lecky and Gibbon both tell us interesting facts about these women. Jerome, writing to their pagan friends in Rome, asks them how they can wear silks, and permit themselves to be carried about by eunuchs, when Paula is wearing sackcloth, trimming lamps, bathing the sick, and giving medical treatments. When Paula died, in A.D. 404, he said that those whom Paula had bathed in the blood of the Lamb needed no other baths.

Among the great hospitals of the fourth century we should mention that of Saint Basil of Cappadocia (born A. D. 329), and his sister Macrina, at Caesarea. They had studied medicine in Athens, where they

¹ Lanciani, Rodolfo, "The Destruction of Ancient Rome," 1903, p. 58.

² Cardinal Wiseman's book, "Fabiola or the Church of the Catacombs," 1854, has been translated into nearly every language. It was a tremendous success for it gives the student an archeologist's point of view of the early Christians.

learned "all Hippocratic lore." Their hospital, built in A. D. 370, was so large that it was "like a walled city or the pyramids in size." There were separate pavilions for different kinds of diseases, and also houses for physicians and nurses. In this and two other hospitals erected by St. Basil and his sister, there were medical schools where bedside instruction was given students with note-books in their hands. The story of these hospitals, as told in the pages of Nutting and Dock (vol. 1, pp. 123-126) reads like a description of one of our modern hospitals. There was the same discipline, the same pleasant relations between doctors and nurses, the white garments, dainty food, clean patients, airy rooms, sanitary conveniences, and the universal oversight of every detail by Macrina, of whom St. Chrysostom wrote, "Macrina was a great organizer, an independent thinker, and as well educated as Basil himself." A later writer adds, "She was next to the Virgin Mary in sanctity."

Saint Chrysostom of Antioch, archbishop of Constantinople (A. D. 398-407), mentions the names of many "manly women" doing medical work during his lifetime. Among them was Olympia, of whom he says admiringly, "She was a good organizer, a widow and a deaconess at the age of twenty, and head of a community of women who were all healing the sick and living the life of charity." We gather that it was she who had cured him of stomach trouble. Olympia had such great wealth that the Emperor Theodosius wished to marry her, but she refused his suit and devoted her life to her work. She had forty women under her; they were very ascetic, thought it holy to go unwashed, to wear ragged clothes, and to go about hungry and sick. Olympia seems to have been older than Macrina, but fully as learned and able. The mother of St. Chrysostom, Arethusa, was another "manly woman" of Antioch and Alexandria, very learned. Chrysostom and Arethusa together had the oversight of three hundred and forty-seven *xenodochia*, or *nosokomia*, or hospitals connected with churches in Constantinople. They also had charge of almost inaccessible monasteries on the crags of Greece and Palestine.

It is interesting to find writers of the fourth century so appreciative of the work of the medical women of their day. We have seen how Saint Jerome valued the work of Fabiola. He said, "If I had a hundred tongues and a clarion voice I could not enumerate the number of patients for whom she provided solace and care." Saint Chrysostom praised Macrina and Olympia and the other women of his period with the same enthusiasm.¹

¹ See "Cambridge Mediæval History," Vol. I., Chap. XX. Thoughts and ideas of the Period, p. 596, Art. by Rev. H. F. Stewart.

Theodorus Priscianus, having cited famous medical women of earlier centuries, praised three women doctors of the fourth century—whom he knew personally, whose treatment he used, and to whom he was proud to dedicate his own book. These women were Leoparda, Salvina, and Victoria. Probably all practiced medicine at the court of Gratian (A. D. 359-383), for Priscian was Gratian's physician. His book, being written for women doctors, contained many quotations from Soranus and Cleopatra and Aspasia. Part of it was in rhyme, to be the more easily memorable. He urges Victoria not to give up the practice of medicine on any account, but to study the causes of sterility and write her case records, a very good bit of advice. He calls Salvina, to whom he dedicates Part III of his book "because of her wisdom,"¹ his "very gentle colleague"; and he carefully describes for her the more important details of the practice of gynecology. He says that Leoparda was a noted gynecologist; but her remedies to us are no more scientific than those of Dioscorides.

Lactantius, who was another teacher of the fourth century, was still teaching that semen is manufactured in the head, and that the uterus is bifid, male children coming from the right side, females from the left. A Persian manuscript, as we have seen, described the uterus as having seven chambers, in each of which there might be a baby. This latter belief still continued prevalent in some places in the Orient, as is told in the story of Sydrac and Boctus, which continued to be popular for centuries.

Gratian abolished the Vestal Virgins, suppressed the worship of the old gods, and expelled the quacks and impostors who offered relics of Christian saints as cures for disease. Nevertheless the faith of the Christians was so fixed upon such relics that they were glad to buy any sort of bone or bit of hair that was labelled with the name of a saint. Both Gratian and his forerunner, Constantine, who ruled A. D. 306-337, were protectors of all the really capable physicians; they proclaimed them and the clergy tax-free, and gave them liberty to teach what and where they chose. It was Constantine who moved away from Rome to the edge of the Sea of Marmora where he founded the city of Constantinople. He invited scholars from all over the world to make his city their home, and promised them freedom from all disturbances. This move resulted finally in the separation of the Eastern church from the Western, and

¹ Theodori Prisciani Archiatri "*Ad Salvinam Praefatio, in librum tertium, qui inscribitur Gynaecia.*" Spach, loc. cit., p. 28.

stirred up all sorts of fanaticisms and rivalries among the Christians. A Roman mob, under Bishop Theophilus, burned the great library at Alexandria, in A. D. 390-391, because it was mainly a Greek library. (It had been burned once under Julius Caesar, and was to be burned again under the Mohammedans in 640 A. D.) The rivalry between the Greeks and Romans in religious affairs resulted, strangely enough, in banishing the Latin works of Galen, for example, and probably accounts in part for the loss of many books written by Galen's followers. Despite all their religious zeal and piety, superstition thrived among the Christians.

During this same fourth century, Saint Augustine (A. D. 354-430), and his mother, Saint Monica, were studying medicine together at their home at Tagaste on the coast of northern Africa, the son evolving doctrinal theology, while the mother went about among the poor and sick, using her medicines where they were needed, caring for women in labor, and giving comfort to the dying. Between times mother and son carried on long arguments as to the viability of a fetus, and the location of its soul. They finally decided that a child was viable from the second month of its intra-uterine life, and that it was a legal being from the fourth month, when its sex became differentiated. This decision settled this particular controversy for the Church for centuries.

If this century was a time of struggles, of wars and pestilences, it was also a century of changing populations. It brought about a decided mixture of races, and with that in many cases—rather contradictorily—an antipathy to new customs and ideas. At the time of Galen's birth, Rome had nearly a million inhabitants. At the end of Diocletian's reign, in A. D. 305, it had scarcely 500,000; and these were reduced to a paltry 15,000 after Totila's conquest in the sixth century.¹ It was in A. D. 303 that Diocletian ordered his general persecution of all Christians, after which he retired with satisfaction to his new palace and flower-gardens in Dalmatia, where he died in his bed almost under the shadow of the temple of Aesculapius.

It was at the end of this century that Oribasius was sent all over the world to collect books, and especially to find copies of Galen and other medical writers. His own compilation, if finished, would have been enormous, but his work was uncompleted, and all but a fraction of what he did gather has since been lost. Oribasius left nothing un-

¹ See Baedeker's "Central Italy," Introduction. Also Lanciani, *op. cit.*, p. 156.

² E. Gurlt, "*Geschichte der Chirurgie*," 1898, vol. I, pp. 426, 527, 532.

touched,² including such topics as the Delphic oracle, the uselessness of surgery for cancer of the breast, and the advocating of a diet of figs, and the use of fig poultices in treating such diseases. He advised watchful waiting as a cure for stone in the bladder. It is evident that he disliked surgery. His book on women's diseases, cosmetics, and obstetrics was, he says, written "for the women doctors." In the remedies recommended by Oribasius are found once more the disgusting preparations of the sexual organs of animals, saliva, skin, hair, nails, bones and urine, the faeces of hedgehogs and dragons, along with clams, sponges, ambergris from the bile of whales, the blood of a fledgling swallow for cough, pearls dissolved in vinegar and sea water for skin diseases, sulphur mixed with human saliva for impetigo, theriac for elephantiasis, and mercury mixed with clam juice for gonorrhea.¹

The end of the fourth century was a time of depression and misery. Ammianus Marcellinus (A. D. 330-395) wrote that all people were under the reign of the devil, and that many an anti-Christ was abroad under the guise of queer beasts and birds. The incredible stories of Apollonius of Tyana were fervently believed by multitudes. And yet not all people were gullible or bored or hopeless. We find the poet Ausonius (A. D. 310-394) a Gallo-Roman who became tutor to Gratian, writing idyllic poems and essays, describing the scenes of his childhood, and incidentally recording the work of his aunt Aemilia, a woman doctor living near the Moselle, who had helped him get an education.²

He says of his aunt that she was a very skilful and honest woman doctor, and that she had studied medicine in order to assist her brother, who was a doctor. He also notes that she wrote books on gynecology and obstetrics, and was much beloved by her patients. Ausonius was a friend of Saint Augustine who was living at Milan and Rome while Ausonius was at the court; and, although the two men were very different psychologically, they both evidently admired intellectual women. Ausonius was as proud of his aunt Aemilia as Saint Augustine of his mother; and, while the latter was composing his famous "City of God," the former was jotting down the homely memories of his childhood in words like the following: "My aunt, Aemilia Hilaria Martertera, was a *virgo*

¹ In the museums in Dalmatia today are found many faïence jars belonging to old apothecary's shops and labelled with the names of the above substances.

² Decimus Magnus Ausonius, "*Opuscula*," Part III, "*Domestica*," p. 33, edited by Rudolfus Peiper, Leipzig, 1886; transl. by H. A. Evelyn White, London, 1919.

devota; and, though in kinship's degree an aunt, she was to me a mother, bright and happy like a boy, and busied in the art of healing like a man."¹

It is interesting to read his accounts of the daily life of the family and their Gallo-Roman friends, their food, their wedding festivities, and their funerals. "Aunt Aemilia" died at the age of 63 years.

III. THE FIFTH CENTURY

SUDDENLY Alaric with his hordes of Goths descended upon Italy, and Rome was sacked in A. D. 410. Thus, as the fourth century merged into the fifth, the condition of the Roman Empire grew worse. The drains of the city of Rome were clogged, malaria was endemic, the great granary of Rome in North Africa was not producing its quota of food, nor was wheat coming any more from Britain or Spain or Gaul. The Picts, Scots and Saxons raided Britain, the Visigoths invaded the regions south of the Danube, the Vandals became masters in Spain, and the Franks made inroads in Gaul. Freebooters and pirates roamed the seas. When the legions were hastily recalled to Rome in 407, they were neither strong enough nor sufficiently patriotic to hold off Alaric, who took the Eternal City in 410, releasing it only upon the payment of a tremendous ransom—including three thousand pounds of pepper.² Alaric's hordes spared the Christian population, but damaged their property, especially works of art, and the books which the barbarians could not read.³ Thus the Roman Empire from a homogeneous empire of sixty-four provinces became a heterogeneous mass of uncultured peoples.

In the year 420 the Empress Eudoxia, wife of Theodosius, a well educated woman and a zealous Christian, founded a new hospital in Jerusalem, where she personally tended the sick. She also aided in the re-establishment of two medical schools, one in Syria, and the other in

¹ "Aemilia Hilaria Matertera, Virgo Devota,
Tuque gradu generis matertera, sed vice matris
Adfectu nati commemoranda pio,
Aemilia, in cunis Hilari cognomen adepta,
Quod laeta et pueri comis ad effigiem,
Reddebas verum non dissimulanter ephebum,
More virum medicis artibus experiens,
Foeminei sexus odium tibi semper et inde
Crevit devotae virginitatis amor.
Quae tibi septenos novies est culta per annos
Quique aevi finis, ipse pudicitiae,
Haec, quis uti mater monitis et amore fovebas
Supremis reddo filius exequiis."

² Le Wall, C. H., "The Romance of Spices," *Am. Journ. Pharmacy*, 1923.

³ Holmes, W. G., "The Age of Justinian and Theodora," 1912, vol. I.

Edessa, in Mesopotamia, east of Van, where the Nestorian Christians had been teaching. As the Nestorians were inclined to the Unitarian doctrine, the other Christians united to drive them from Edessa. They were allowed, finally, to settle in Persia, where the queen, a granddaughter of Zenobia, welcomed them. She sent to Greece for physicians, and to other parts of the world for books and scribes, and established at Gondeshapur, or Gonde-Chapur—the place is spelled in many ways—a new medical school where men and women studied together, translated medical books into many languages, and treated the sick.

The medicines recommended at this school and the prescriptions were somewhat like those of India; the latter were written on palm leaves neatly fastened together. The so-called Bower Manuscript, dating from the fourth century, may have been in use at Gondeshapur. It purports to be a dialogue between Buddha and those who are inquiring as to certain remedies, particularly one called *chebulic myrobalam*, a universal blood purifier.¹ It was supposed to cure everything but lock-jaw, stricture of the throat, and consumption, but was not to be given in pregnancy. As a digestive it was prescribed with ginger, molasses, and rock salt. It also promoted intelligence and sensibility, and regulated the flow of bile; and, taken with castor oil, it cured constipation. The one rule for its use to be absolutely obeyed was this: "Five pellets that have lain for seven days in the urine of a buffalo must be eaten for seven consecutive days with milk and a diet of rice"; this prescription, if strictly adhered to for three times seven days, was said to cure dropsy, all abdominal swellings, and all liver trouble. The *myrobalam* had originally grown from the tears shed by a god, hence its power.

But, unfortunately for the progress of medicine in this century, there were still no original investigations; and obviously such remedies as the one just cited could not—even with faith—cure any disease, even though the patient survived the doses. For this reason Christians began to rely mainly upon holy relics, to hang in the churches wax models of their diseased organs, and to have faith in dreams interpreted by saintly men and women.² Thus we hear of a certain Theodoric of Alexandria³ who had been poisoned. He was told in a dream to swallow a live asp. In trying to do so he vomited so abundantly that he got rid of all the

¹ "Archeological Survey of India," 1912, vol. XXII, ed. by A. F. R. Hoernle.

² E. T. Withington, *op. cit.*, p. 123.

³ C. G. Crump and E. F. Jacobs, "Legacy of the Middle Ages," 1926, pp. 28-30.

poison! *Mirabile dictu!* No wonder that we hear no names of physicians connected with medication of this sort. If there were medical men and women doing sincere medical work—and there probably were a few—they were busy, too busy to write about it.

The chief business of this dark century,¹ apart from actual war, was to decide certain theological questions, such as the divinity of Mary, the amount of power to be wielded by the clergy, and the part to be played by women in church services. Evidently these questions were settled to the satisfaction of the Church, for Mary was considered divine, the Church obtained more and more temporal power, and women were more and more forced into the background. Meanwhile Attila (who died in 455) and his half million wild Huns overran Europe as far as the Rhine; Clovis, or Chlodvig, invaded France; and from the north came Theodoric, the great Diedrich of song and story, crushing everything in his path and setting up a kingdom in Ravenna in opposition to the rule of Justinian in Constantinople. Southern Italy, during part of this perilous fifth century, was ruled by Pope Gregory the First, who paid his army for twenty-seven years with the revenues of the Church. But there was no peace anywhere. Before 475 there had been ten nominal Roman emperors; but barbarian chiefs ruled in Spain, Gaul, and Africa, and Teutonic invaders were rapidly becoming masters of England.

"At such a period," says Villari,² "slaughter, pillage, and incendiarism left few original documents to illustrate the history of the Roman Republic," or, let us add, of medical men or women, for notwithstanding theological quibbles and political quarrels and actual wars, medical work has to go on.

We have already remarked how errors crept into the old manuscripts and were perpetuated. But it is difficult for us to imagine a world in which all the books used by men or women are manuscript copies of previous manuscript copies. Remember that handwriting, then as now, varied greatly and was often difficult to decipher. We have only to look at the still extant manuscripts to feel special sympathy for all who had to read them. It is small wonder that names of authors meant little, and were often misspelled, or wrongly translated from

¹ Singer calls this the beginning of the dark period of the world of science. It lasted a thousand years.

² Enc. Brit. Art. "Rome," by Villari.

Greek to Latin, or even omitted entirely as unessential. Singer¹ tells us that even in the tenth century there were only fourteen medical authors whose works were used by the teachers at the schools. These were our old friends Hippocrates and Galen, Dioscorides and Oribasius, Soranus and Musa, Priscian and Apuleius (a sixth century writer on plants), Boëthius' Aristotle, Moschion, the gynecologist of the sixth century, Cleopatra of the second, written like a quiz compend, Firmicus, who wrote at Constantinople on astrology and its influence on birth, and Paul of Aegina and Aëtius of Amida, of whom we shall soon learn more.

We are told that during the reign of Theodoric the Goth, at Ravenna, an elaborate set of rules had been promulgated, apparently by some sort of a medical society, to govern the social behavior of a doctor. His clothing was to be dignified and unostentatious, his prognosis ambiguous; he was to look important and learned, and be circumspect in demanding a fee. But then, as now, a woman in labor is less concerned with a physician's dignity than with his, or her, ability to relieve her. The relics of a saint, the sight of an ascetic like Simeon Stylites on his pillar, night and day for thirty years, or of human beings trying to live on grass like an ox, or stretching themselves on spikes to be fed by ravens, might impress a patient with imaginary complaints; but to care for a woman in labor, a child with the colic, a man with a broken arm, a leper, the practical work of well trained physicians was necessary.

It seems hopeless to look now for the names of the men and women who must have given practical help to the lame, the halt, and the blind, of those days. And yet, as in the centuries just before Christ and after, we have at least the evidence of tombstones; and, after all, that is evidence enough. We know from them that it was no uncommon thing for women doctors—and, of course, it is that great anonymous body of women doctors through this dark period in which we are most interested—to be buried with honor by their parents, children, husbands, patients, or slaves. Here, for example, are a few examples of grave-stones from Christian burials of perhaps the fifth and sixth centuries after Christ, signed with the cross or fish, or "*In pace*":

"To my sainted goddess Primilla, a medical woman, daughter of Lucius Vibius Meliton; she lived forty-four years, of which thirty were without trouble with Lucius Cocceius Aphorus, who erected this monument to the best and purest of wives, and to himself." This marble tablet is in the Berlin museum.

¹ Singer, Charles, "Origin of the Medical School of Salerno." Volume presented to Sudhoff, op. cit.

Another important tablet found in Capua is to a "*Magistra in Medicina.*" At Cori is another to a "*Magistra*"; and still another in Cervaria reads "*Sp. F. Fortunata, Magistra, Matri. Matutae, D. D., Paul. Tontia, M. F. Consua. Piatrices.*"¹ In Padua there is a stone to a "*Magistra Proba, Petrusia.*"² A stone found in Lyons, France, reads: "*Metillia Donata, Medica. De Sua Pecunia Dedit,*" meaning that Metillia, "a medical woman," paid for her own stone. There is also a stone to Julia, wife of Quintus Julius, a Sabine woman doctor; or, as another translator reads the words, to Sabina, a woman doctor, the freed slave of Julia Quinta. The wording is ambiguous. Let it be remarked here that it is often difficult to decipher these inscriptions. Many letters were omitted for the sake of economy; stones have decayed; and notes are lacking to explain matters that were obvious fifteen hundred years ago.

There is, however, a clear inscription to "The daughter of Nicenus, a freed woman belonging to the woman doctor Terentia, to whom the tablet was erected by her grandchildren."³

From Spain, in the old Roman city of Merida near the Portuguese border, comes this inscription: "Julia Saturnia, aged 45, an incomparable wife (*muliere sanctissime*) and the best doctor (*medicae optima*) erected by her husband, Cassius Philippus, *Maritus ob merit.*"⁴ Merida was a large and flourishing city before the seventh century and the arrival of the Saracens. It still has the remains of a fine theatre, a magnificent temple to Mars, a very early Byzantine church to a martyred saint, Eulalia, a long Roman bridge and other striking remains of its former splendor. We may know of only one woman doctor in Merida, but, by every law of probability, if we have the tombstone of one, there were scores of others whose gravestones have not yet been discovered, or who never had stones erected to them at all. Merida is today a poverty-stricken city of scarcely more than ten thousand inhabitants, difficult for the hurried tourist to visit, and therefore not a show place; but because of its position and history it may reveal splendid treasures to future excavators.

There are many such gravestones along the Appian Way, near Rome. One reads, "Empiria, aged 49 years, wife of Vettianos of Cios,

¹ Gruter, p. LX.

² Gruter, p. LXXXIX.

³ Henzen and Rossi, no. 9616.

⁴ Hübner, p. 62, no. 497.

erected by her husband because of her medical skill." And another, now in the Vatican, reads, "Valeria Berecunda, aged 34 years, 28 days, *Iatromaia*, of Rome, erected by her husband and daughter, for she was the best doctor in her quarter of Rome."

A fine inscription was found in Tarragona, near the east coast of Spain, south of Barcelona, and not far from the great Cyclopean wall; it is in the shape of a Christian cross, but its inscription is pagan in style: "*D. M. Juliae. Quintianae Clinico. Fil. Karissim Mater Posuit et si . . . bi*," or, "Julia of the Quintius family, a clinician, most dear daughter, Mother placed this stone to her." There were many such reminders of "incomparable daughters," "best of mothers," or "wives." (The term "*clanicus*," by the way, is not as common as "*medica*.")

In another of the Roman colonies, old Carthage on the north coast of Africa, scores of late Christian burials have been found among the relics of the old Phoenicians of the time of Queen Dido and her pagan gods. There, close by the ruined temples of Tanit and Baal, with their votive offerings of miniature legs and babies and breasts, are found also the remains of martyred saints with Christian crosses. Among the grave-stones are several to men and women doctors, to nurses, *maias* and *obstetrices*. One of these stones, now in the museum of Carthage (collected by Père Delattre), is a small but very beautifully inscribed tablet to a woman doctor, Asyllia. The slab is of dark green stone, about 30 x 25 cm., and reads, "Here lies Asyllia Polia, daughter of Asyllus, woman doctor; she lived sixty-five years. Fuscus, her freedman, made (this tomb) at his own expense."

ASYLLIA ✚ L F POLIA	Asyllia L(ucii) f(ilia) Polia
MEDICA H. S. E. ✚	Medica h(ic) s(ita) e(st)
VIXS A. LXV	Vixs(it) a(nnis) LXV

FUSCIUS L. D. S. F. Fuscus l(ibertus) d(e) s(uis) f(ecit)

We note, in the transcript of the inscription on the left, the two crosses inserted in the lines, and the clearly written word "MEDICA," when the other words, as the transliterated form of the inscription above on the right shows, are abbreviated. The translation was made by Professor Audollent, dean of the Faculty at the University of Clermont-Ferrand; and was published in the *Medical Revue* by Dr. Marie Derscheid-Delcourt, of Brussels, in 1925, together with a photograph of the stone. The above transliteration shows clearly the methods of abbreviation used on these stones. Many other stones have been found at Carthage, and re-erected outside the museum there, one to a nameless *medicus*. Most of them bear the pious "*in pace*," a phrase that might well appeal to any doctor after a lifetime of practice!

What civilization would have been like in those troublesome centuries without the Christians it is difficult to imagine. Sarton says that the Christian religion was the one force which kept barbarous Europe from a far worse fate than medieval darkness. The fifth century at least kept medicine alive, and saved the Latin language, although not in its pristine form. Before the end of the century great numbers of men and women fled to monasteries to find rest and peace.¹ These institutions were springing up in the wake of Saint Patrick in Ireland, the hermit saints in Egypt, and Saint Benedict in Italy. Not far from Alexandria, and on the Nile near Memphis, were scores of anchorites in the desert, and twenty thousand nuns were mortifying their flesh while they copied books, sang psalms, and prepared for the next world.

IV. MEDICINE IN THE SIXTH CENTURY

AT the end of the fifth century, Theodoric the Great, the Ostrogoth, 454-526, was able by the help of the Pope to stem the tide of decay, and keep peace for ten years. At his court at Ravenna, on the eastern coast of Italy, he employed Boëthius (475-524), and Cassiodorus² (480-575), to foster education and culture. Boëthius was writing what proved to be his final work on diet and hygiene, warning his readers against the use of pickled meats, spoiled fish, poisonous mushrooms, and bad cheese, and advocating a diet of bacon in intestinal parasitical diseases, and partridge flesh for dysentery.³ But suddenly Boëthius was executed (524) on the charge of treason; the army of Justinian fought and conquered the Ostrogoths; and pandemonium was again let loose. Fortunately Saints Benedict and Cassiodorus were safe in their monasteries copying manuscripts in peace; and Theodoric was on the way to immortality as Diedrich von Bern, the hero of song and story.

While pestilences of all kinds raged in this century, charlatanism was also flourishing as never before. Gregory of Tours (540-594), insists that the bones of the saints worked marvellous cures; and we know at least that holy relics multiplied to meet the demand for them. Dust from tombstones, wax from church tapers, and even incubation sleep took the place of doctors and drugs, and were evidence of a "medical" condition that continued in Europe for two hundred years, or until the

¹ Robinson, Charles Henry, "The Conversion of Europe," 1917.

² To Cassiodorus the basis of education was languages and mathematics. He disregarded medicine altogether.

³ Max Neuburger, "History of Medicine," 1910, vol. II.

time of Charlemagne (742-814) and Alcuin, the Anglo-Saxon monk (735-804).

In England and Ireland, however, medical conditions were not quite so bad as on the Continent. The disciples of Saint Patrick (who died in 469), and the followers of Saint Augustine of Hippo (who had died thirty years earlier) were traveling back and forth between Rome and their western schools and churches; and they kept religion and education from stagnation. Bede (674-735) tells us in his history that during those years of the fifth century medical studies were not neglected in England. Monks and priests and leeches practiced freely such medicine as they knew. Their anatomy was mainly from Aristotle, their medicines were scarcely better, being those of Dioscorides; but Aristotle and Dioscorides were better than hocus-pocus. Shortly after the death of Saint Patrick, Saint Bridget (453-525) was at work practicing medicine and midwifery in Ireland. She was said to be the daughter of a "druidess," to have been converted to Christianity, and to be able to perform miracles of healing. Probably she practiced according to the methods of her age, went about among the poor and the sick at Kildare, and was at least able to convince the rulers that outright quacks should be banished from the country. In the famous Book of Glendalough we find rules governing the fees for physicians, and other progressive legislation, as well as laws against impostors. Glendalough, south of Dublin, is one of the most beautiful valleys in Ireland. An important hermitage was built there. In later centuries the name of Bridget came to be revered, and many another woman of her name followed her example by opening hospitals and practicing medicine, as we shall see in later chapters.

In Spain, among the Visigoths, from the fifth to the eighth centuries, more laws were enacted against doctors than for their benefit. The worst of punishments were meted out to abortionists,¹ the tortures to which they were put being brutal almost beyond belief. Unskilful bleeding was punished with a heavy fine, and witnesses were called upon to testify to every operation. In Merida, where, as we have seen, there has been found a tombstone to a woman doctor, the bishop of Spain, Isidorus Hispalensis (570-636) built an immense hospital, containing 580 beds, on the bank of the Tagus, and staffed it with men and women doctors and teachers from the school of the Nestorians at Gondashapur,

¹ Neuburger, vol. II pp. 12-14.

in Persia. And the Bishop himself compiled a great encyclopedia from eighty authors, as a textbook for the students.¹

During this same period, under Justinian and Theodora, seventy thousand people of Asia Minor were forcibly baptized, and, to root out heresy more effectively, the medical school at Athens was closed in 529. Women doctors who were slaves still brought the highest prices in the market. Theodora, while empress, founded hospitals for the sick throughout the Empire after the plan of the hospitals of Fabiola, and erected orphan asylums like those of Tiberius. To root out prostitution she opened homes where lewd women were kept under supervision. The household water for Constantinople was collected and stored in vast pillared cisterns under the city to keep it from pollution, and these cisterns are among the sights of Stamboul today. Aëtius of Amida (527-565) was writing his famous "*Tetrabiblion*," in which, as we have already seen, he quoted extensively from Aspasia and Cleopatra. Those parts of his book dealing with gynecology and obstetrics were the main texts used by women doctors up to the time of Trotula of Salerno in the eleventh century.²

Among the women doctors quoted by Aëtius is one named Andromache, an Egyptian of his own time. She used all sorts of remedies to cure pain and suffering, among which Aëtius quotes one for toothache containing pepper, pyrethrum, galbanum, etc.³ For bruises, luxations, and ulcers, she prescribed a black plaster of ground bone, gluten, wax, bitumen, pitch, oil, rosin, and opopanax (ginseng?). She evidently had read Pliny's pharmacopoeia, for Aëtius quotes remedies as his from her book, with the remark that Pliny was a clear fountain from whose waters all writers drew. Most of Andromache's treatment was, however, like that of Aëtius,⁴ taken from Egypt rather than from India, except that she used the actual cautery instead of the knife in surgery, advocated the magic words of Samonicus, believed in the possession of devils, the laying on of hands, and in cures by the royal touch.⁵

For gynecological treatments and obstetrics Aëtius quotes page after page from Aspasia and Cleopatra, as has already been said. He seems

¹ It has been said that Paulus, Bishop of Merida, performed Caesarian section on a live mother, in this century, and saved both her and the baby.

² The "*Tetrabiblion*" of Aëtius was printed by order of Pope Clement VII, in 1534, in double columns; in this edition the work fills two thousand pages.

³ See edition of 1542, p. 423.

⁴ Neuburger, vol. I, p. 333.

⁵ Cumston, Charles Green, "Introduction to the History of Medicine," 1926, p. 212.



THE EMPRESS THEODORA BETWEEN SAINTS BENEDICT AND
SCHOLASTICA.

From a 6th century mosaic in the church of Theodoric, in Ravenna.

to have gone further than they in describing dystocia of the pelvis as an impediment in labor; but, like them, he believes in podalic version, in placing dry sponges in the vagina to provoke the expulsion of a dead fetus, and in reaching with the left hand into the uterus to remove an adherent placenta. In his book on surgery he advocates the removal of a cancerous breast, and stone in the bladder, in amputation of the clitoris in girls, and in the circumcision of little boys. He described hydatid mole, and praised Cleopatra for dropping oil into the eyes of new babies; but, strangely enough, he also believed in taking as tender care of lucky stones as of children, and in using them according to definite rules.

From such items as these we may form some conception of the unassuming life of the women doctors of the sixth century. Is it entirely impossible to imagine them, quietly disregarding the turmoil of wars and plagues, going about their daily work, hurrying along the narrow streets with their medical kits and torchlights on a stormy night to care for a woman in labor, or stooping at a fireplace to make a cup of hot calamint tea for a crying child, or filling a pig's bladder with hot water to warm the feet of a fainting pilgrim, or producing an opium pill and giving a cupping treatment for a headache? And yet, in 581, the Fathers of the Church were asking in all seriousness whether or not women were reasoning animals or mere brutes without a soul. And having with much logic decided in the negative, the Church decreed that women could no longer be given position in it. A century later it went further: henceforth women were not to be allowed to speak; "*non enim eis loqui permissum est, sed subjici sicut dixit lex.*"¹

Yet in this same century Saint Benedict (480-544) and his sister Scholastica were going all over Italy while a plague raged, helping the sick and teaching others how to be of use to suffering mortals. After the epidemic subsided, Benedict gathered together a few kindred spirits, and settled down at Subiaco, in the Sabine hills not very far from Rome, to copy manuscripts for the glory of God; while Scholastica established hospitals and trained nurses to do the work she herself was doing, to bathe the sick, give them medicine and food, and pray with the dying. Whether she kept any records or wrote a single book is not known.

In 528 Benedict moved his "Order" to Monte Cassino, forty-five miles from Naples, fifteen hundred feet above the sea, where his monks continued their copying. But as time went on they grew more careless,

¹ Council of Nantes, Canon III, A. D. 660.

and the texts they produced were less legible than the texts produced by their predecessors. Still later brigands and plunderers sacked and burned their cells, and in the tenth century the "brethren" moved down to Salerno, on the coast, where possibly they helped to found the great co-educational medical school there, that was to lead the world in productiveness, originality, and fame. When Boccaccio visited the monastery at Monte Cassino in 1350, he could find no remains either of their manuscripts or of the School.¹ Of the medical books that these monks had copied, however, we have a partial list of the fourteen which, according to Charles Singer, are the ones so often copied both in the earlier and later centuries. Six hundred manuscripts from this Monte Cassino copying workshop have been found, however, scattered among the libraries of Europe, many of them difficult to read, although their "broken Lombardic letters" are in places sometimes quite legible.² The nuns, under Saint Scholastica, also copied manuscripts "with all their might"; but whether they copied the Bible, "in order to stab the devil," or copied medical books we can not tell.

There was, as has been mentioned, a terrible epidemic of plague during this century. Procopius tells us how, in the year 540, it spread all over the known world. From 5,000 to 10,000 persons died every day in Constantinople alone. Its symptoms were those of the modern bubonic plague. Every pregnant woman died, for "there was no cure for the disease." Procopius added that many physicians fled from the cities, but that the women remained to do what they could to help the sufferers and pray with the dying. His own mother was said to be one of these devoted women doctors, whose only reward was to be found in the heavenly kingdom.

Fortunately, after this epidemic, the remnants of the populations of Europe had peace for many years. In southern Italy Greeks and Romans and Jews lived together harmoniously. Gregory the Great (540-604), sent missionaries in 597 to Saxon England with the second Saint Augustine. Ten years earlier missionaries had been sent to Spain, which had become virtually Christianized. With France also quiet, Gregory of Tours could write his history; and, with Italy peaceful, Alexander of

¹ Daremberg, Ch. V., "*Geschichte der Medizin*," 1861. Boccaccio said that many scraps of manuscripts, or loose pages, had been used by the monks for charms and amulets.

² Thorndike reminds us that nothing of any value in medicine was written during the thousand years between Leo the Great, who died in 461, and Leo the Tenth, in 1521, when the Reformation was in its early years. He also says that almost the only records of contemporary events come from monastic annals, and they are naturally not journalistic.

Tralles, from Asia Minor, could find time to copy and annotate another gynecology for women doctors, along with a book of Galen. Gynecology and obstetrics were being comparatively well taught, it will be noted, at a time when general medicine was almost neglected. Paul of Aegina in the following century was saying that the only cure for the plague was to eat a raw lettuce leaf and endives, drink cooling teas, and avoid wine.

Although there were, in the sixth century, almost no women doctors or midwives whose names have been preserved, in Constantinople, Germany, and France there were queens who had studied medicine, and who seemed to find joy in caring for the sick. Clothilde of Burgundy, wife of Clovis (465-511), built a church to Saint Geneviève, and then, during the Burgundian war, retired to the monastery of Saint Martin of Tours, where she spent her time in caring for the sick. She died in 544 and was sainted for her good deeds.¹

The second of these sixth century medical queens was Radegonde, wife of Clothaire (497-561), the son of Clovis I. She was a princess of Thuringia, an independent kingdom extending from the Danube to the Elbe. Clothaire had fought to reunite his father's kingdom of Burgundy with those he had newly inherited. He seized Radegonde,² the daughter of his enemy, and made her his fifth living wife. She was then a high spirited girl, and this arrangement was entirely against her will. She had, however, her own palace, and here she assembled all the lame, sick, and blind beggars of the region, studied their diseases, and prescribed the treatment for them. Sometimes the learned men of the court were her teachers and consultants, but she soon became very skilful in diagnosis herself and cured all sorts of ailments. In her religious zeal, however, she went to the excess of kissing the feet of her patients, and drying their wounds with her long hair. To her husband she was cold and unfeeling, and this so angered him that he killed her brother. Whereupon, in 542, Radegonde fled to a convent in Poitiers founded by her friend Cesaria. Radegonde herself later became the Abbess at Poitiers, and in 550 she sold all her jewels and built a large hospital, where she cared for the sick and trained two hundred nurses to follow her example. They set bones, dressed wounds, prepared remedies, made bandages, and spent their spare time in copying manuscripts. Many rich women gave Radegonde money for her hospital, while Clothaire himself saw to it that she never was in want for anything. It

¹ Kurth, G., "Saint Clothilde," 1897.

² Kavanagh, Julia, "The Women of Christianity," 1852, pp. 59 ff.

was said that Radegonde "shrank from no disease." She died at Poitiers in 587; and wonderful cures were said to have been made at her tomb.

The third royal medical woman of this century was Julia Anicia, daughter of the Emperor of the East. She was born at the palace in Constantinople, in 472, studied medicine at the Court, and was personally interested in hospitals. To her, as a wedding present, was given a beautifully illustrated copy of the *materia medica* of Dioscorides.¹ In the first printed edition of this work, produced in the sixteenth century, Julia Anicia is portrayed as the Goddess of Intelligence and Discovery. In her uplifted hand she holds a mandrake, its head crowned with a radiating halo, its root-like feet tipped with toes. In another quaint illustration in this edition Julia hands a mandrake to Dioscorides, who is distinguished from Julia chiefly by his beard, while the poor dog whose life, according to the accepted superstition, was sacrificed to obtain the mandrake root is gasping his last breath at her feet.²

There was one other royal medical woman in this century who became famous for her work for the sick and for lepers—Theodolinde, the wife of Agilulf, or Ago, King of Lombardy. To her Gregory the Great gave an iron crown said to have been made from the nails of the true cross, in recognition of her great benevolence and medical skill.³ She died about 590.⁴

V. THE 7TH, 8TH AND 9TH CENTURIES

COMING now to the seventh century, the strongest tasting and most disgusting remedies, along with holy relics, were still what the people of Europe craved, for the treatment of disease. These remedies were to be gathered or bought according to certain rules, and often at high price. Plants with black berries were taboo, as they had been among the de-

¹ Singer, Charles, "History and Method of Science." Vol. II, p. 12, shows a particularly fine drawing of the sow thistle with its roots and buds and seeds. There are other illustrations of plants from sixth century manuscripts in Singer's "From Magic to Science," 1928, pp. 177, 179.

² The mandrake, a plant of the potato family, was to be pulled from the earth by a dog which was supposed then to drop dead on hearing the cries of the plant. It was used for quieting pain, for facilitating pregnancy and making labor easy, or as a love philtre. The Hebrews as far back as the time of Jacob believed in the power of the mandrake to cure sterility.

³ Kavanagh, Julia, "The Women of Christianity," 1852, p. 59, ff.

⁴ Our modern system of dates was the invention of Dionysius Exiguus, who lived in the first half of this century. Bede and other historians dwell on this fact.

votees of Isis in Egypt,¹ but those with white berries, like the mistletoe, were supposed to ward off evil spirits. Animal remedies continued in favor, and exotic remedies of all kinds were carried from place to place by commercial travelers. In Egypt the remedies of the so-called Druids were sold in exchange for poppy seeds and preparations of animal products, such as unicorn horn, mummy powder, etc. Theodore of Tarsus, when he arrived at his see of Canterbury in 671, bore with him many plants from Asia Minor, the use of which he taught to his monks. He also gave them new rules for bleeding and cupping. In return, King Offa, of the eighth century, sent doctors from England to Rome to rebuild the old hospital of Aesculapius according to Christian plans, and to teach the Romans the use of British remedies.² The foundation of Offa's hospital, and still earlier ones of pagan times, may be traced today beneath the modern hospital of Saint John of Calabita on the island in the Tiber.

Throughout this period, in the northern part of Europe, women physicians were everywhere recognized. It may be asked where they could study in the seventh century. Those who could afford the expense went to Alexandria where, from the middle of the sixth century until it was destroyed in 640, was the best of existing medical schools.

Mohammed was born in 570. While he lived the Christians in north Africa were not disturbed; but, after his death in 632, his followers were fired with holy zeal to destroy all heretics,³ and Alexandria and its books were destroyed in the process. However much we may deplore this third burning of the library at Alexandria, it is probable, if the usual story is trustworthy, that most of its books already had been copied, and were to be found elsewhere. We must remember that all the materia medica of the seventh century was practically worthless. In fact, as Thorndike says,⁴ the Merovingian period (the fifth to the eighth centuries) was "a desert of medieval Latin in which a scholar could not tarry long without perishing from intellectual thirst."

The only outstanding writer of this period was Paul of Aegina⁵

¹ Wehrli, G. A., "Essays on the Hist. of Med.," ed. by Charles Singer, p. 385.

² For a type of the traveling Englishman in all ages, see W. E. Mead, "The Grand Tour in the Eighteenth Century," 1914.

³ It took no more than seventeen years to give Mohammedanism the impulse from which it has never yet ceased to go forward. Muslim chronology dates from the time of Mohammed's flight to Medina in A. D. 622. (See Sarton, vol. I, p. 464.)

⁴ Thorndike, Lynn, "Magic and Experimental Science," p. 616.

⁵ Paul of Aegina, "*De re medica, libri septem.*"

(625-690), who had been a student at Monte Cassino. He quite truthfully declared that there was nothing new in medicine, and modestly signed himself "a humble scribe," which is really what he was. He undertook to reduce to seven the seventy volumes of Oribasius, keeping intact chiefly the books Oribasius had compiled on gynecology and surgery. He evidently wrote his seven volumes, which he called the Pleiades; but, unfortunately, one is lost and our only knowledge of his text on gynecology comes from later writers who quote an occasional item.

Such as they were, the gynecological teachings of Paul of Aegina were followed for hundreds of years by the midwives of Europe. He recalled from oblivion several instruments long neglected; among them the vaginal speculum, known to the Greeks and Romans before Christ, the trocar and canula for draining ascites from the abdomen, a crushing instrument for the cure of hemorrhoids, and ligatures as well as cauteries for stopping hemorrhage. He also recommended a method of podalic version in difficult labor, which had been forgotten since the days of Cleopatra. For children he prescribed soothing lotions for sore gums, hot baths for convulsions, and suppositories for constipation. Among surgical operations he described one for the removal of a cancerous breast; but he regarded cancer of the uterus as hopeless from the first and not suitable for operation. Withington considers Paul the most important product of the school of Alexandria. He was so helpful to the midwives among the Mohammedans that they often called on him for help in difficult cases although this was against their law.

It is difficult to determine Paul's original texts, for his works were first translated into Arabic, then back into Latin and from Latin into Greek, etc., etc. By the time they were first printed in 1528, the text must have become much corrupted. Sometimes the author's name was given as Christopherus Orosius, or Christobal de Orosco, or Paulus Aeginita; when his works were translated into English by Francis Adams, in 1844-1847, the form chosen was Paul of Aegina.

Monasticism, which gained headway all over the known world,¹ in the sixth century, became even more popular in the seventh. Both men and women entered convents, where they lived busy but quiet lives. The men in their monasteries cultivated the soil and copied manuscripts; the women in their institutions learned whatever they chose—household arts, teaching the Bible, psalm singing, and especially the care of the sick. It was from these convents that women went out into public life

¹ Eckenstein, Lena, "Women under Monasticism."

again to help the infirm, heal the wounded and treat the lepers. These early convents were by no means prisons. Their occupants consisted of men and women from all classes of society, who wore no special garb, and were at this time not under permanent rules or vows. Often they were more independent than they would have been in their own homes. These early monastic women were really pioneer medical missionaries; for, so soon as they had learned the art of healing, they journeyed far and wide. In England and in Scandinavia the women of the early Middle Ages, with their new-born babies, could travel anywhere, on foot or on horseback, without being molested, despite the wars and turmoil of the times. We are told that they even found brass dishes hanging on the stakes from which to drink at every spring.¹

In due course women were appointed to rule over certain convents. Such women were both earthly magistrates and spiritual mothers, warning on idleness, punishing laxity of morals, and teaching not only the Seven Liberal Arts but whatever was known of medicine. Among the most famous of these women abbesses of the seventh century was Berthildis, the widow of Clovis II. Following Radegonde's example, she restored the Abbey of Chelles, near Paris; and placed over it Bertile (652-702), a learned nun born near Soissons. Together they put an end to slavery in the entire region and abolished the oppressive head-tax on men and cattle. These reforms aroused strong opposition; and finally, in weary desperation, Berthildis retired to her monastery of Chelles² where she devoted herself to medical work. She died in 680.

Some years after the death of Berthildis, Giselle, the sister of Charlemagne, ruled this same abbey both wisely and well. It had become so popular with the nobility of England as well as of France, that knights sent their daughters across the Channel to be educated at Chelles, and some of these women founded convents in England on their return. To one of these, named Mildred, King Egbert of Kent (664-673) gave for a monastery as much land as a deer could run over in one course, i.e., 10,000 acres. It is recorded that Mildred ruled with great success; and, because of her medical skill, cured hundreds of seemingly hopelessly sick. They also affirm that after her death the very dust from her tomb and from the rock where she landed at Ebbsfleet cured many diseases if merely mixed with water and applied to the body!

¹ Bede, "Ecclesiastical History," (Bohn Library), 1849, Chap. XVI, p. 100, is authority for this statement as of the year A. D. 634, from MS.

² Eckenstein, *op. cit.*, p. 85; see also Welch, Alice Kemp, *op. cit.*, 1913, Chap. I, and Mrs. Jameson, "Legends of the Monastic Orders," 1852.

Among the other abbesses in England in this same century, were Berthagyta (sometimes called Adelberger or Ethelberga), Etheldrida, Hilda of Whitby, Walpurga, Theodolinda, and Otila (or Odilia), each noted for her ability. Berthagyta¹ was a descendant of Clothilde of Burgundy and of Clovis I, and was a daughter of Haribert, King of the Franks, by his Saxon wife, Ingeberg. After her marriage to Ethelbert of Kent she corresponded with Pope Gregory the Great, and prepared the way for the mission of Saint Augustine to England in 597. In the course of a few months her husband, the King, and ten thousand converts were baptized by Augustine, after which the new religion spread rapidly throughout Kent. Bede,² the historian, says that Ethelberga, as he called her, was known all over the world for her wisdom. He compares her with Saint Helena, the mother of Constantine, and adds that she established the first Benedictine nunnery in England, at Barking, in Essex. During the rest of her life he says, "Ethelberga governed wisely and well, teaching medicine to the women under her care, healing the sick, and tending them with great skill." She died about 616.³

Queen Etheldrida was the daughter of Ine (or Anna), king of the East Angles. Her dowry from Tonbert, her first husband, was the island of Ely, where is now the great cathedral, and where she practiced among the nuns, teaching them how to treat diseases and to serve the poor. They tried also to cure lepers⁴ but their success could not have been great. Bede (p. 206) says that, when the young Etheldrida herself was sick and about to die of an abscess in the neck, a monk named Cyneirid was called in consultation; he lanced the abscess and gave her great relief, but evidently her system had become poisoned and she died four days later, in 660. Bede says that she believed that the Lord had sent this sickness because she had been vain of her beautiful neck; and he adds that, when her body was exhumed sixteen years later, it was perfectly sound, her wound having been miraculously healed. Green, in his "Short History of the English People" (vol. I, p. 60), calls her Aethelthryth, and says that she was the wife of Ecgrith, King of North-

¹ Neuburger, *op. cit.*, vol. II, p. 9.

Bede's "Ecclesiastical History of England" (Bohn Library), 1849, is the chief authority for many of these facts.

² Mrs. Jameson, *op. cit.*, p. 65.

⁴ Bishop John, according to Bede, could cure almost anything by breathing on the patient and by prayer (pp. 238-244). When Herebald's skull was broken by a fall from a horse, Bishop John breathed on him and ordered a surgeon to bind the head tightly. The cure was immediate, A. D. 686.

umbria. He agrees, however, that she founded the Abbey of Ely, and there performed miracles of healing so that, whatever her name, we have an authentic tradition of her medical ability and of her charity to the sick. In her memory, in 688, King Ine, or Anna, when in Rome in his old age, founded the great San Spirito Hospital, not far from Offa's hospital on the island in the Tiber,¹ which has already been mentioned.

Perhaps the most famous of these royal abbesses, however, was Hilda of Whitby² (614-680), the niece of Edwin of Northumbria. She was an Anglo-Saxon princess, converted to Christianity by Paulinus, the first bishop of Northumbria, in 627. As soon as she was baptized, says Bede (p. 151), she wished to go to Chelles and Poitiers to study medicine. The bishop, however, urged her to study at a small monastery near the river Wear. In 648 he placed her at the head of an abbey at Hartlepool on the Northumbrian coast, where he consecrated her the first nun trained in England. In 655, King Oswy (or Oswiu), who had succeeded Ecgrith, requested Hilda to take charge of his estates and assume the care of his little daughter Aelfleda.³ In 657 Hilda built Whitby Abbey, a double monastery for men and women on the coast of the North Sea, where for thirty years she taught medicine, theology, grammar, music, and all the known arts. Bede (p. 213) tells us that "five bishops were taken from her monastery." She was a good business woman, and skilled in caring for the sick, being always called in consultation in time of serious illness. It is said that, when the abbess of another monastery was suffering from blood-poisoning in the arm, and was "given up to die," Hilda found that although she had been bled at the correct time of the month, the high tide of a waxing moon, her arm needed poulticing and prayer; and so she was healed.

Hilda's monastery at Whitby was chosen for one of the greatest synods of the Church. We may suppose that Hilda, like Radegonde, had trained assistants, or nurses, to do the actual work of the hospital. It would have been impossible for one woman to do all that it is said that Hilda accomplished (among the other things the teaching to Caedmon of

¹ "Anglo-Saxon Chronicle," edited by J. K. Giles (Bohn Library), 1849. King Ine had succeeded to the Kingdom of the West Saxons and had built the Minster of Glastonbury.

² Encyc. Brit., Art. *Hilda*; and Eckenstein, Chap. III.

³ Bede, p. 151. An interesting story recounts that this little girl, evidently very ill with appendicitis, was in such agony with cramps in her bowels that she could not stand erect. Almost in despair of the little sufferer's life Hilda placed the girdle of Saint Cuthbert, wet with holy water, around the child's abdomen, and she recovered! Cold water or an icebag would be used today.

the Bible stories which he turned into beautiful songs¹). Many are the stories of her wisdom, for which we have no room here. She died in 680, and the king's daughter, Aelfleda, great-granddaughter of the Saxon Edwin, became abbess in her place. She, like Hilda, was skilled in all the arts of medicine and surgery, and she gave her personal attention to the patients. Bede, whose contemporary history is the source of our knowledge of these women, feels obliged, in every case of recovery from illness which he records, to give credit for the cure to prayer, or to some holy relic, even to dust from a tomb, or to water in which a splinter from the cross has been dipped.

As we turn from the seventh century to the eighth, we at the same time cross the Channel to Germany, Bohemia, and Italy. Conditions of life there were not very different from those in England. The currents set in motion by Benedict and Scholastica had by this time penetrated all Europe; and everywhere learned and pious women were devoting themselves to the sick. Among these was an abbess named Odilia (or Ottila) of Hohenburg, in Germany, who in 720 built a monastery and a hospital which became famous for its cures of eye troubles. It was said that Ottila² was born blind; and, according to the custom of the times, was cast out to die, utterly neglected by her parents. Some nuns found her by the roadside and took her to their church for baptism. No sooner did the holy water touch her eyes than her sight was miraculously restored. The child was educated at the monastery, and became a specialist in the diseases of the eyes, like Saint Lucia of Italy.

Another "medical missionary" of this century was Walpurga (754-778), an English princess who studied medicine in order to practice among the poor. She founded a monastery at Heidenheim, between Munich and Nuremberg, and tended the patients in its hospital. She is always described or pictured with a flask of urine in one hand, and bandages in the other. Her pupils became in turn teachers in other institutions. After Walpurga's death, she, too, was sainted; and from her grave near Eichstadt gushed forth a spring of oil such as she had used during her life, by the use of which thousands of patients were said to have been healed.

Harless says (p. 143) that the daughters of Count Crocus of Bohemia were all skilled in medicine, and this is affirmed by Pope Pius

¹ See the edition de luxe of the "*Cædmon*" prepared by Sir Israel Gallancz, 1927.

² Nutting and Dock, vol. I, p. 161; Mrs. Jameson, p. 85.

the Second, Aeneas Sylvius, who adds that their names were Brela (or Kassa), Tetka, and Libussa. Libussa "became a veritable Medea in her healing, whether by prayer, by medicine or by magic," said he.

Nicaise is probably right in his statement that in Italy many laymen and women were practicing medicine from the seventh to the ninth centuries.¹ Among the lay medical women, according to Neuburger², were several in Lombardy who had been taught by Paul the Deacon, historian of Lombardy, 720-800.³ One of these was Adelberger (or Bertha), the daughter of Desiderius, the king who ruled 756-774, and was the last ruler of the Lombards. Paul asserts that there was a guild of lay physicians centering in Lucca and Pistoia, in northern Italy, who had established certain requirements for the practice of medicine. This Paul was almost the first medieval historian, a Benedictine monk of Como, and a man of erudition. Though much less medical than Paul of Aegina, he also, in his way, helped to prepare a basis for the later great school at Salerno.

During the eighth century manners and customs and languages were all changing as a result of continually increasing travel. French was becoming quite distinct from Latin, and Spanish and Italian differentiated from each other. The Arabs, or Moors, were swarming along the coasts, and bringing into their ports many new and strange words, while Greeks from Constantinople, Jews from Palestine, and merchants from the far north were all meeting at various centers. Each had some influence on the language of the others, although Latin was still the language of the scholars and very advantageous for travelers as well. In the far east, however, the language of commerce and medicine was still Greek.

This century saw also a change in chronology generally adopted, and great advances in geography. Bede died in 735 believing that the earth was flat, circular and yet four cornered, with a layer of water above the sky; but even in his time there were some intelligent minds who dared to doubt. Handwriting was changing again to a new style, beautiful to look at but hard to read, called the Beneventan script, from the town in southern Italy where monks were particularly busy in copying manuscripts.

As the countries during this century were in the main at peace, and visited by neither famine nor plague, their people became lazy

¹ Nicaise, E., *Les Écoles de Médecine et la fondation des Universités au Moyen Age*, 1891.

² Neuburger, vol. II, p. 9.

³ Encyc. Brit. 1929, vol. XVII, "Paulus Diaconus."

and extravagant in their food and clothing. Men and women who could afford luxuries "decked themselves limb by limb" with robes of many colors. They wore vests of fine linen of violet color, scarlet tunics with hoods, sleeves with fur or silk trimmings, and curled their hair with crissing irons. Women added a thin white veil to their head dresses with ribbons reaching to the ground, and pared their fingernails to resemble the talons of a falcon. Even nuns dressed themselves in such style for their journeys to Rome on horseback. Abbesses took pilgrimages with a retinue of servants, visiting monasteries and abbeys en route, to pick up the latest fashions in food and clothing, and hear the freshest gossip. As a rule they went as far south as Monte Cassino to buy books, but a visit to the Pope was the main object of the journey.

Of the strictly medical women of this century we know scarcely a name; but we do know that there were such because all over Europe laws enacted for the medical profession during this period specifically mention women "doctors," as well as midwives. The fee tables were much like those of former centuries, and the penalties for death or injury in surgical cases were as horrifying as in earlier times. If, for example, a patient died after an abortion the surgeon who caused it might forfeit her life, and her descendants to the seventh generation were obliged to pay an indemnity to the family of the deceased.

During this century the power of the Popes was steadily increasing. Pepin, the king of the western countries in 754, made Pope Stephen II the "visible head of the church." This action in effect divided the Italian peninsula into the kingdom of the Lombards, and the papal kingdom at the south. Charlemagne, twenty years later, found it necessary to protect the papal territories from the Lombards, and at the same time to combine all the force of the Eastern and Western kingdoms against the Arabs. In gratitude for this protection Pope Leo III placed the iron crown of Theodolinde on the head of Charlemagne, A.D. 800, and thus was born the Holy Roman Empire. Fortunately, Charlemagne was sufficiently powerful to bring peace to all Europe for a time. He established schools throughout his great kingdom where boys and girls might study all the known arts and sciences; built hospitals and libraries; endowed monasteries where manuscripts were copied; and encouraged the planting of herb gardens. He had been himself a student at Monte Cassino, and knew the value of medical books and the necessity for medicinal plants.¹ Alcuin of York (736-804), a friend and companion

¹ In 820, six years after his death, the herbs of the monastery of St. Gall, in Switzerland, were so famous that they were sold to "honest people" and itinerant vendors, and by them taken all over the world. Daremberg believes that many original medical books were produced at St. Gall which sometime may again see the light of day.

of Charlemagne, was commissioned to institute libraries and medical schools in every monastery. Thus was founded, in 794, the old monastery of St. Albans, not far from London, whose schools and collection of chained books drew students from all over Europe, especially during the ninth century when Alfred was King.

It was in this century that the Arabs began to be famous as medical students, and as translators and writers of medical books. In 711 they conquered Spain, as they had already conquered Persia and northern Africa. Settling in Spain, however, was a longer and more difficult process than it had been in the other countries; but the Arabs eventually made themselves at home there and kept it at peace for nearly five hundred years. Under leadership of the great Haroun al Raschid, of Bagdad, 736-809, a remarkable civilization sprang up in all of the Arab countries. Mosques were built in every large city, attached to which were always a school and a hospital, the latter generally well built with the best of sanitation and the greatest comfort. In Bagdad the medical school is said to have had six thousand pupils, women as well as men; and the schools in Cairo, Kairouan, Cordova and Toledo were almost as important. Women were given long and practical courses in midwifery and alchemy, in order to care for the secluded Mohammedan women, for women were naturally the physicians and surgeons in the harems. At Bagdad, however, there was a man teacher of obstetrics, Abul Faragh. Educated by the Nestorians in Persia, and at one time one of the physicians of Charlemagne's family, he was later, because of his great ability, summoned to be a teacher at this Mohammedan school in Mesopotamia. Being strong and self-reliant, he was allowed to enter the lying-in-rooms of all Moslem cities, assisting the midwives in difficult cases. He always praised the women for their skill; and they, in return, were grateful for his help.

The Arabs were famous translators and copyists from both the Latin and the Greek, and their libraries grew by leaps and bounds. That at Cordova, within its first hundred years, was said to have acquired two hundred and twenty-four thousand volumes. Many of our medical terms such as alcohol, naphtha, camphor, etc. were coined at this time. Unfortunately, both the Arabs and the Jews disliked surgery and the study of anatomy. Dissections were most disagreeable to them; although they finally did notice and record the fact that the human uterus is not seven-parted or like that of a pig.

Several Arabians of about this time wrote medical books for the general public. Mesue (777-837), the son of a physician, and a Chris-

tian, was physician to one of the Caliphs of Bagdad. At his own house he opened an academy of medicine; and there he wrote his famous *Antidotarium*, which at once became very popular because, in easy language, it discussed such common topics as fevers, bloodletting, astrology, baths, etc. Mesue's theory as to the cause of disease was simple but somewhat original. He thought that disease was a sort of putrefaction which bred flies and that the flies caused the symptoms of the sickness. One of Mesue's hobbies was his "anesthetic sponge." He called it his "consolation." A solution of poppy juice, mandrake and vinegar was soaked up by a sponge, heated and inhaled. Mesue said it would cure the blues, drive away all pain, strengthen the patient's optimism, and help a woman in labor. This anesthetic sponge became a favorite device two hundred years or more later, among the teachers at Salerno.

In the ninth century another Christian Arab, Johannitius (809-873), wrote another popular medical book, which he called the "*Articella*." The materials in this book, like that of Mesue, were mostly taken from Galen, but it was written in an easy style, and was also a favorite for centuries among Arabs, Jews and Christians alike.¹

The most famous writer of the ninth century was, however, an Arab named Rhazes, 860-932. He is classified by Garrison with Hippocrates, Aretaeus, and Sydenham, as "a clinician of ability who described diseases with understanding." Rhazes had been a student at Bagdad, and became the director of its largest hospital and also court physician. He is said to have written more than two hundred articles on medicine, astronomy, philosophy, and physiochemistry. The majority of these have been lost; but, from those that remain, we find that he knew Greek, Arabic, Persian and Indian languages and literature. He had travelled in many countries, had collected books, and had written an encyclopedia of all knowledge. Sudhoff says that Rhazes was the first to give us a book on pediatrics, the first to describe measles and smallpox, and the first to distinguish other exanthematous diseases. He proved that dead

¹ Neuburger, vol. II, p. 47, says that the Arabians copied and translated whatever they found. They cared nothing for the rules of grammar, mutilated names, corrupted technical terms, made almost unintelligible transpositions in the text, and often so confused the meaning that it is difficult to make sense out of their result. Max Meyerhof says that in the ninth century there were one hundred Christian medical writers, three pagans who worshipped the stars, three Jews and five Mussulmans. Two hundred years later the tables had turned and there were only four Christian medical writers, seven Jews and the rest Mussulmans. See Withington, *op cit.*, and also Max Meyerhof, article in *Isis*, vol. XII, no. 37, 1929.

animals polluted wells or streams, even though running water was supposed to be harmless. He believed in the curative effect of sunlight and fresh air, and in every way was as progressive as was possible in that century. There were sixty hospitals in Damascus when he lived there, all under his jurisdiction.

There are some phrases in Rhazes that might give the impression that, despite all his wisdom and honors, he was sometimes a bit jealous of his women colleagues. One of his books¹ has on its title page the subtitle "Why ignorant practitioners, and common women, may be more successful in curing certain complaints than better informed physicians"; and, in another place he says, "If a doctor does not cure a patient quickly, a woman doctor is then called in, and she gets the credit of the cure." But this impression does not do him justice. As a matter of fact he frankly acknowledges that he had often learned new remedies from women herbalists . . . "who" he says "had little knowledge of medicine but great insight"; and he admits that from women he also learned to try small doses of mild medicines rather than stronger remedies. He also says that women doctors often succeed by kindness and optimism, and that they have greater humanity than men. Such fairness and frankness as this is a delight, especially when one considers his real greatness. Despite his generosity and his learning he died blind and in poverty in 823. Sarton calls him the greatest clinician of Islam.

VI. THE TENTH AND ELEVENTH CENTURIES

HOWEVER peaceful² the large cities of the Arabs may have been in the ninth and tenth centuries, there was little peace in the rest of Europe after the days of Charlemagne. As the Mohammedans poured up from the south, so the Norsemen poured down from the north, both advancing over Europe like huge stone rollers. And there were local disturbances. In 928, Theodora, a concubine of one of the Roman senators as well as of the reigning Pope, John X, with the help of her children and others, attacked the papal palace, dragged the Pope out, and imprisoned him in Castle Angelo, where he soon died. Then Theodora's son was made Pope, under the name of John XI. This act shows the temper of the women of Italy at that time. Nor were the women of England less obstreperous. When John Scot Erigena was teaching at the court of Alfred, his students, women as well as men, stabbed him to death because

¹ Neuburger, vol. I, pp. 360-363.

² De Renzi, Salvatore, "*Collectio Salernitana*," 1852-59, vol. I.

they objected to his theology. His worst fault seems to have been that he believed that creation was a process instead of a single act.¹

John Scot Erigena was an Irishman; but his originality was not typical of the Ireland of the ninth century. As a matter of fact it was quite otherwise. There was peace in Ireland² during most of the ninth century. The people were superstitious, poetic, and imaginative; they were, to the best of their ability, preparing for the approaching millennium. In medicine the practical teaching of Patrick and Bridget had been submerged in a sea of tradition. Whether a diagnosis was correct or not made very little difference, for treatment was the same in any case. Graves (p. 138) repeats a story showing how the doctors and nurses of this period did their work. It happened that one of the opponents of Cuculain received such injuries that every bone in his body was broken. He was taken to a bone-setter of Ulster to be healed. The leech's house had four wide-open doors to let the winds pass through freely, and a stream of pure water flowed through his hall. The leech and his assistants, many of them maidens, set all the bones, and made the patient comfortable on a bed of healing, whereupon they gave an eloquent and agreeable discourse to the audience which had gathered to watch the proceedings.³

In the meantime, while Arabian writers were copying texts, Jewish physicians, although, according to Billings, they were "contraband luxuries," were the chief doctors of the royal families of Europe.⁴ They were also eagerly sought, and handsomely paid, by princes and merchants in every country. This, not unnaturally, gained them the hatred of the Christian and Arab doctors whose patients they treated, and was one of the things which led to their later persecution. But large fees are not a temptation to all physicians, men or women, Jews, Arabs or Christians. We are told that one Arab doctor received the equivalent of \$750 for bleeding and purging the Commander of the Faithful twice a year.

We have said that nothing new in medicine developed during these centuries, but there was a new theory of dosage on the *similia similibus*

¹ This theory was too unorthodox for the people of the Middle Ages. At this time the Abbey of St. Albans, where Alfred established Alcuin's medical school, was England's teaching center. Alfred's mother had been his tutor.

² Alfred Percival Graves, "Irish Translations of the Ninth Century," 1927.

³ The Celtic Aesculapius was a man named Diancecht, who lived 831-903. He had a son and daughter who excelled him in healing. Vida Latham (*Med. Woman's Jour.*, 1917) says that their house was on the bank of a stream, open to wind and sun, and furnished with heat, baths, etc.

⁴ E. T. Withington, *op. cit.*, p. 171.

curantur plan, which had a brief vogue. The remedy was to be used with certain prayers, and its basic idea was that it was only necessary to know where there was a pain, and then find its counterpart. For instance, the lungs of a fox were to be given for a cough, its brains for epilepsy, its fresh muscles for anemia, and plants of the approximate shape of a special anatomical organ to cure that organ.¹

The most amazing thing about the *materia medica* of these centuries was that people had sufficient faith in the most fantastic medical notions to adhere to them so long. We say this and then remember that in Morocco today one finds these notions still in existence. The "Leech Book of Bald," written about 900, is quite as good as anything now in use among the uneducated Arabs of Marrakech or Fez.

Take this "Leech Book of Bald"², an Anglo-Saxon *Materia Medica* in three volumes, dating from the early tenth century. The first volume is an alphabetically arranged formulary of remedies; the second treats of internal disease; the third is a concise account of herbs, charms, and prayers. "Leech" was, of course, the old word for "doctor"; and "Bald" may have been the name of the author.³ The book was written in the vernacular for the use of the common people of England.⁴

Some of the herbs of the "Leech Book" were to be dug or cut at a certain time of the moon, others were to be stabbed with a knife, in silence, and left while the gatherer went to church to pray. Or he might return to take it mixed with moss from a crucifix. Holy water from a baptismal font, wax from an ear, pious formulae written on paper and worn by the patient, were all considered remedial. Even in

¹ Garrison, loc. cit., p. 219.

² Payne, J. F., "The Fitzpatrick Lectures," 1903. See also Neuburger, vol. II, p. 18, and Cockayne "Leechdoms, Wortcunning and Starcraft," 1865, vol. 2.

³ Lynn Thorndike suggests that a Jew, named Jesu Haly, of Bagdad, may have been its author.

⁴ A few examples from the "Leech Book" will show us what sort of remedies it recommends, and how dependent these were upon magical phrases. For bleeding hemorrhoids: Delve round a plant of celandine root and take it with thy two hands turned upwards, and sing over it nine pater-nosters, and at the ninth, at "Deliver us from evil," snap it up, and take from that plant and others that may be there a little cupful of the juice, and let him drink it. It will soon be well with him. For the delirious: Gather bishops root, lupin, boneset, polypodium-fern, corn-cockles and elecampane, sing the names of the saints and a pater-noster thrice about these herbs, then take them to church and sing again the names and twelve Masses in honor of the twelve apostles. For a large boil: Dig up a dock, jerk it from the ground to the tune of a pater-noster, take five slices of it and seven pepper-corns, mix them thoroughly while singing twelve times the miserere and gloria and pater-noster, then pour it all over with wine, and at midnight drink the dose and wrap thyself up warm.

China today patients of a certain type swallow the paper on which a prescription is written.

For the pains of labor the names of the Virgin Mary, or of Lazarus, were to be written in wax and bound beneath the foot of the patient—the name of Lazarus being used because he came quickly out of the tomb when called! Sores and eczema were treated by calling upon Solomon; and Longinus was mentioned in connection with a stitch in the side. For fever several herbs were gathered, such as fever-few, fennel, and plantain, then boiled with holy water, and the names of the Apostles repeated, along with a hodgepodge of Arabic words denoting ancient idols.

Could anything be more absurd than these remedies? It would hardly seem possible; yet, even after a thousand years, there are still intelligent people who believe in such extraordinary nonsense as the possibility of preventing rheumatism by wearing a rabbit's foot, or a dried potato, or a "cramp ring," or in curing a pain by having an "oxygenator" tied to the patient's foot or hand.

As for the midwifery of this century there is little to say about it except that it had degenerated abominably from the time of Cleopatra and Aspasia. There was no longer any idea of turning the infant, either by podalic nor cephalic version. Often the ignorant midwives waited until the infant and the mother were both dead before extracting the child. Gynecology consisted mainly in the use of poisonous remedies to cure sterility, and barbarous operations to procure abortions. There are still native doctors in Egypt and Morocco, who depend on these methods of the early Middle Ages.¹ The midwives there still believe in watchful waiting for the end of labor, or else, while the patient squats on the floor, the midwife pushes and pulls on the baby. The will of Allah of course determines life or death, and nothing they might do could in any case change the fate of the patient!

The Jew Donnolo, born in 913, should have his name recorded here; for, though not an Arab, he was kidnapped as a child by the Saracens and taken to Palermo to be educated. He learned both Arabic and Latin, studied all the sciences, and finally escaped to Salerno, to teach in the medical school there, which was then in its infancy. He soon became a friend of the noted Christians who went to Salerno either for its healing springs, or to study at its medical school. Here Niketas

¹ See the writings of La Doctoresse Légey, published by the Institut des Hautes-Études Marocaines. Also her *"Contes et Légendes Populaire du Maroc,"* 1926. This book has been translated into English.

was already copying Soranus once more, and illustrating his manuscript with nearly a hundred free hand drawings; and Bishop Peter III and Bishop Alfano, "*prudentissimus et nobilissimus clericus*," were already teaching medicine. Donnolo, owing to his acquaintance with several languages, became a teacher of materia medica; and his "*Antidotarium*" was popular for years because of its condensed list of drugs, only about one hundred in all, mostly of vegetable origin, as against the nearly seven hundred which by this time had come to be recommended by the ancient teachers. Sarton (p. 682) believes that to such men as Donnolo, who wrote in Hebrew, and to his contemporaries who wrote in Latin and Greek and Arabic, was due the character of the Salerno school.

There is one other Mohammedan writer of the tenth century, perhaps the most important of all, whose books were used by the medical profession for centuries, very nearly superseding those of Galen. This was Ibn Sina, better known as Avicenna, a great scholar, born near Bokhara in 980. In his fifty-seven years of life he wrote one hundred and five books, in Arabic and Persian; and elaborated and reclassified the works of Galen and Aristotle; and, although he was never much of a practitioner himself, and hated the sight of blood, he was able to keep a score of copyists busy while personally leading a licentious life. Yet he was able, by the clarity and comprehensiveness of his presentation of it, to make medicine seem to be a perfect and finished science, so perfect and so finished that he effectively discouraged all original experimentation and investigation for hundreds of years.¹ To the women doctors of all those years his books were precious, for they were easy to understand, easy to memorize, and pleasing in style. Avicenna also offered them a far wider range of medicine than Donnolo had; and that was an asset in an age when there were no specific remedies, and when the more complex the nostrums were, the better they were liked.

In the meantime at Braunschweig, in the northern part of Germany, there lived a learned woman, Hrosvitha (935-1000), perhaps as worthy to sit among the immortals as any of the Arabian writers. Hrosvitha was a Benedictine nun of Gandersheim, the daughter of Heinrich, duke of Bavaria, "*illustris et clarissima virgo et monacalis*." She wrote religious dramas modelled on Terence, Vergil, Horace and Plautus; but, in the midst of her literary efforts, she gathered herbs for medicine, and traveled about among rich and poor, caring for the sick.²

¹ Sarton, *op. cit.*, pp. 709-711.

² Crump and Jacobs, *op. cit.*, p. 167.

Sarton² says that Hrosvitha "embodied the science, mathematics, literature and drama of her age." Her six religious comedies were anticipations of the later miracle plays; and her "*Carmen de gestis Ottonis*," a history of Otto the Great, who was crowned in Rome in 962, and whose cousin she herself was, was comparable to the history of the English written by Alfred the Great, who died in 901. It was said of her that she read Greek and Latin, and "wrote both by divine grace."

It is a pleasure to visualize this nun, Hrosvitha, as she went about on her peaceful medical work, returning to her cell in the evening to write. Although she never became an abbess, we are told that she taught medicine and treated patients like any other woman doctor, besides attending to literary work in her free hours. We may only regret that she never wrote anything that has as yet come to light on medical topics. When the countries all about Braunschweig were in tumult, the monastery at Gandersheim was an oasis of community study. This monastery, and others like it, were the forerunners of our present day women's colleges.

Hrosvitha's cousin, Mathilda, abbess of the monastery at Quedlinburg, had equal medical skill. She ruled the empire during the infancy of her nephew, Otto III, grandson of Otto I; raised an army and defeated the invading Wends in 983, and she also supplied Hrosvitha with considerable material for her medical and historical work. This was not without precedent in Germany, however, for their grandmother, Maud, queen of the first Saxon King, Henry the Fowler (crowned 919), tended the poor and sick "with pious fervor." Cunegunde, somewhat later the widow of the emperor of Bavaria, Henry II (crowned in 1002) also retired to a monastery, and gave her time and strength to the sick. She became a Benedictine nun, but not an abbess, and died in 1038. There is a story that, having been accused of immoral relations with a man of the court, she walked barefooted over red-hot plowshares to prove her innocence. These were very human women, often very benevolent, and frequently generous to a fault, doing the humble duties of physician and nurse in troublesome times, but sometimes maligned.

As the tenth century merged into the eleventh we find the medical Arabs still copying Galen, still disbelieving in the efficacy of Christian relics as remedies for disease, but trying experiments with new chemicals, and translating books unceasingly from one language into another, thus preserving them. In far-away China, it happened that, at about this

² Sarton, G., *op. cit.*, p. 658.

time, a new medical treatment was being re-developed, treatment by acupuncture by means of which medicines were done away with, the body being pierced by needles in many spots so that from each a devil of disease might be exorcised. Fortunately, this was one medical aberration which never got a foothold in the western world, where the "Canon of Avicenna" was now becoming the standard textbook of medicine.

At the end of the eleventh century, a great new medical school was arising in Constantinople under the leadership of Anna Comnena (1083-1148), daughter of Alexis I. Like Hrosvitha, she wrote a great history, an elaborate work in fifteen volumes, of her father's reign. She studied and taught all that was then known of medicine, and also practiced in all the hospitals and orphan asylums of Constantinople. The ruins of her great red palace still stand on the hill above the Golden Horn. It once had porphyry columns, beautiful paintings, a gold and ivory throne, but now its broken windows look out on ruined walls and a crescent sea that glows like fire in the sunset.

Chapter III

The School of Salerno: Trotula

I. SALERNO—ITS EARLY HISTORY

ALTHOUGH students of art and architecture consider the thirteenth the greatest of centuries, and tell us that it was the beginning of the Renaissance in Europe, the eleventh century was the one that gave a fresh impetus to exploration and commerce, and, what is of interest to us, to medicine. Hitherto, as we have found, it was Greece, Rome and Constantinople, and the great Moslem cities of Northern Africa, Asia Minor, and Spain that determined all the advances in the arts and sciences; but, by the middle of the eleventh century, the Normans from the western coast of France began their conquests, either from motives of commerce or from religious zeal; and in 1046 Robert Guiscard, "the Resourceful," transported his army to southern Italy to unite with the Lombards in expelling, not only the "pagan Saracens," but also the Greeks, who had been there for fifteen hundred years. Incidentally, the Lombards within a few years were themselves forced to retire and submit to the Normans, who were then being aided by the armies of the Pope. Thus Europe's centers of culture were pushed to the west; and, in the course of the next two centuries, teachers from the schools of southern Italy were giving in France and England the medical courses that had first been given at Salerno, on the coast of Italy thirty miles southeast of Naples.

Such seaports as Salerno, Constantinople, and Alexandria must have been full of excitement in those days, when Egyptians and Arabs from North Africa, Greeks and barbarians from the east, Normans from the far west, and Visigoths and Saracens from Spain, all enemies to one another, and ready for attack by sea or by land, met and fought at the slightest provocation. To the victor belonged the spoils; and, whether Christian or pagan, one nation or man was not less cruel than another. Salerno had been for centuries the halting place for



SALERNO AS IT APPEARS TODAY.

(The "x" marks the castle on the hill, the "y" the cathedral.)

merchants, and for pilgrims to or from the Holy Land, and there, in the eleventh century, travellers found not only a haven of refuge but famous medicinal springs, guest houses, hospitals, and a coeducational medical school where the latest methods of cure were used, with or without recourse to the bones of saints. Longfellow, in "The Golden Legend," mentions the

"Pilgrims and mendicant friars and traders
From the Levant with figs and wine,
And bands of wounded and sick Crusaders
Coming back from Palestine."

Salerno had been famous for its healing springs ever since Augustan times, when Antonius Musa, the physician to Vergil and Horace, sent patients there rather than to Baiae. We are told¹ that the bishop of Verdun, Adalberon, went there in 948 to find a cure for stones in the bladder, having failed to get relief from the sacred relics of saints. His physicians were two other bishops, Pietro III and Grimoald, who removed the stones by the aid of Saint Benedict while the patient slept. Fifty years later, Salerno had become a melting pot of all nationalities and religions, for, besides the medical monks of Monte Cassino, who lived there collecting manuscripts of medical, philosophical and religious books, and copying them in the Beneventan script, there were Arabs and Jews, Greeks and Romans, laymen and ecclesiastics, talking all languages, but uniting to converse in a sort of debased Latin which presumably every educated person could understand. The medical works of Hippocrates and Galen and Aristotle were the sources of the medical teaching; but they were translated into the other languages, and written down or memorized by the students. Men and women studied together at Salerno under men or women teachers. And among the most famous teachers of the faculty in the eleventh century was a woman named Trotula, or Trotta, whom we shall discuss later at length.

Of all the peoples who met at Salerno, the Jews were perhaps the most pacific and scholarly, the Arabs the most skilled in astronomy and mathematics, the Greeks most able in logic and theological discussion. Of the Christians, the Normans were inclined to be the most fanatical and belligerent; whereas the previously ruling Lombards had been liberal-minded and good assimilators, mild and wise in governing the heterogeneous nationalities who made up the city's population. Salerno

¹ Schelenz, Hermann, "*Geschichte der Pharmazie*," 1904, p. 303. Cumston, Charles Greene, "Introduction to the History of Medicine from the Time of the Pharaohs to the End of the XVIII Century," 1926, p. 213.

is beautifully situated, on a hillside above a cup-shaped bay, with tier on tier of mountains rising behind and above its houses. In the eleventh century it was much larger than it is now; it contained convents and churches, hostels for pilgrims, and hospitals for the sick or maimed, where there were not only physicians and nurses but pharmacists and priests to provide remedies for ailments of both the bodies and souls of visitors. The conquering Normans were an uncongenial element. They would not tolerate the Greek religion or the Moslem; nor would they permit idleness among the women. It is said that Judith, the wife of Roger I, fought like a man in the war, and ate the warm heart of her enemy, while Roger himself performed as mighty feats of valor as had his father, Robert, or his grandfather, Tancred of Hauteville.¹

¹ Robert Guiscard was the sixth son of the mighty Tancred of Hauteville in Normandy, now called Tancarville, where the ruins of his castle on a height above the Seine may be seen today. Several of the sons of Tancred went to southern Italy to make their fortunes, Robert arriving in A.D. 1046. He at once joined the Lombard ruler in an attempt to drive out the Greeks and Saracens, but soon found himself attacked by the rebellious natives and the armies of the Pope. In 1059, however, the Pope had a change of heart and joined forces with Robert so that they became masters of the country. Robert was created Duke of Apulia and Calabria, and future Lord of Sicily, "by the grace of God and St. Peter." In the following twenty years he and his powerful brothers invaded and conquered most of Sicily, where, to make himself more secure, Robert married Sikelgaita, or Sichelgaita, sister of the Lombard prince, Gisulf, and daughter of Duke Gaimar of Salerno. Ordericus Vitalis tells us that she was a "well-known toxicologist." Historians say that she had studied medicine in order to get rid of obnoxious people at the court. She did try to poison Bohemund, her step-son; but failed because her attempt was discovered through a pharmacist who had been ordered to compound her prescription.

Marion Crawford tells us the story of this Bohemund, who became the first ruler and hero of the Southern Kingdom, and Anna Comnena gives us many details of these early Normans, along with other character studies. Roger I (1031-1101), the elder brother of Robert Guiscard, supported his nephew, Roger, against Bohemund, whose son by Adelaide, his third wife, eventually became Roger II. This Roger lived at Palermo, ruling wisely. He was crowned in 1130, and during the next twenty-four years he formed an alliance with Louis VI of France, Henry I of England, and Lothar of Germany, so that together they almost conquered Greece and Constantinople. Anna Comnena tells us that he was tall and powerful, with long fair hair and a full flowing beard. He was an absolute monarch, maintained peace when once he had his way, and allowed people of all religions to worship as they pleased. After the death of Roger II, Salerno was sacked under the emperor, Henry VI, but restored by Frederic Barbarossa, although the medical school never quite recovered its prestige.

Robert Guiscard, while ruling the vast territories of southern Italy, was called King of England in the writings of Peter the Deacon; although, by remaining in Italy and making a journey to the Holy Land, he actually lost England to his cousin, William the Norman. It has been said that Sikelgaita, his wife, died because she sucked the poison from a wound in his leg when he returned from Jerusalem. In gratitude for his victories, Robert in 1077 built the cathedral of Salerno, and dedicated it to St. Matthew. Its great fore-court pillars, 28 in all, were brought from the Greek temples at Paestum, forty miles away. He also built a castle, and surrounded the city with a strong wall.

Salerno rapidly became a rich and beautiful city. The bronze doors of the cathedral were a present from a rich citizen, and its pulpit was given by a penitent warrior who, like the Duke, had "slain his hundreds with a great sword." The Knights of St. John of Jerusalem were given a new hospital by the Chancellor of Salerno, and Robert did so much for the medical school that they gratefully prepared a compendium of medicine as a present to him. It was inscribed, "*Roberto regi scripsit schola tota Salerni.*" This inscription was diplomatically changed from time to time to dedicate the work anew to later rulers.¹

It is hopeless for us to try to understand the medical life of the Middle Ages, and especially of the eleventh century, without taking into account the religious life of the people. If we shudder at the cruelty of the so-called Christian Normans in their urge to destroy the enemies of their faith, we should also shudder at the terrible slaughter of Christians by the "infidels." Every man was willing to die in defense of his belief. Scholastic discussions were taking the place of the practical religion of Jesus Christ; and southern Italy, with its precious relics of the saints, its monasteries and great churches,² was the center for ecclesiastics.

If we visit today the city of Salerno on the point of its curving bay, the first object that strikes the eye is Robert's old ruined castle on the hilltop, and the mossy wall that zigzags up to it. Beyond, and quite around the horizon, rise picturesque hills on which dark stone pines stand out against the sky among terraced vineyards and clusters of pink and yellow houses. Where once by the shore stood Robert's great wall is now a shaded promenade, bordered with gardens gay with stonecrop, foxgloves, begonias, and other flowers in season. The old church of St. Matthew with its marble pillars stands out prominently on the hillside, and there pilgrims and tourists still may see the relics of the saints and the marvelous pulpit and bronze doors dating from the twelfth century.

At least one generation before Robert's time there had been a medical school at Salerno; but not a trace of the foundations of its buildings can be found today. Whether it had been originally a religious institution carried on by the monks of Monte Cassino or not, nobody knows; but by the middle of the eleventh century it was already coedu-

¹ Article by Edmund Curtis, of the University of Dublin, in "Encyclopedia Britannica," and Crawford, F. Marion, "The Southern Kingdom," volume II, (1900).

² Crawford, *op. cit.*, p. 197.

educational, and among its professors, or *magistri*, were lay men and women. Sarton says that it was the first non-religious medical school in Christian Europe, and that it was influenced by Lombards, Greeks, Jews, and Arabs, becoming in the twelfth century mainly Arabic.¹ Orderic Vitalis says that its learned monks, and its lay men and women teachers, attracted hundreds of students from all over the world to their lectures. At least one of these teachers, Trotula, became a *magistra*; and her fame has come down to us through the ages, not only through her writings, which were copied and used for seven hundred years, but through verbal tradition.

Sir D'Arcy Power and Capparoni² say that the school of Salerno, like the universities of Paris, Oxford and Cambridge, began with a voluntary assembly of masters and pupils, obtaining a charter and recognized position only at a much later date. Sarton adds that, from no definite beginning, the school had a gradual growth, becoming in the eleventh century the only scientific center of international significance. It is quite probable, however, that the medical school was originally an offshoot of the monastery at Monte Cassino, where, in 529, St. Benedict had founded his order, and had set the monks to collecting and copying manuscripts of all kinds. When, in 884, the Saracens sacked the monastery, the monks fled to Salerno for refuge. There they soon resumed their old routine, living as a community for nearly two hundred years.

Daremberg, Haeser³ and other historians emphasize the lay character of the school at Salerno, and call attention to the women teachers. Orderic Vitalis, the most trustworthy contemporary historian (died 1142), though not particularly interested in medicine, tells us of the visit to Salerno of a certain celebrated Frenchman named Rudolph Mala Corona (died 1068), a monk of Marmoutier in Normandy, who was so skilled in medicine that his equal could scarcely be found in all the country with the sole exception of "one wise matron in Salerno." This Rudolph was one of seven sons and four daughters of Gisela of Batenbourg, and Giroie, a French nobleman. His sister, Judith, to whom we

¹ Sarton, Geo., "Introduction to the History of Science," vol. I, p. 725.

² Vitalis, Orderic, "Hist. Eccl." lib. III, A. D. 1141—Bohn Transl. by T. Forester, 1847.

³ Capparoni, Pietro, "*Magistri Salernitani Nondum Cogniti*," Welcome Historical Museum Series, 1922.

⁴ Haeser, Heinrich, "*Grundriss der Geschichte der Medicin*," 1884.

Daremberg, Charles Victor, "*L'École de Salerne*," vol. V, 1861.

Vitalis, Orderic, *op. cit.*, vol. I, p. 423, vol. 4, p. 27, Bohn edition.



PATIENTS VISITING A SALERNO PHYSICIAN, 12TH CENTURY.

They carry money, wine flasks, etc. The parrot was the sign of the physician. (Harleian mss., British Museum.)

have already referred, became the wife of Roger, Count of Sicily, and in other ways the family was very well connected and prominent in the eleventh century. Orderic lived in the neighborhood of Rudolph's home and knew the family intimately. He says that Rudolph had sown many wild oats in his youth, and by his evil deeds had justly earned the title *Mala Corona*. He was, however, a studious boy, and in the schools of Italy and France he had "learned the secrets of science and astronomy with signal success as well as grammar and dialectics and music." "The natives of Norman France," says Orderic, "still relate many things which appear to us wonderful concerning his experiments in cases of disease and accidents such as they themselves witnessed or heard from their parents, to whom he was well known from his long residence among them." Migne, quoting Orderic,¹ says of Rudolph, "*Physicae, quosque scientiam tam copiose habuit ut in urbe Psalernitana, ubi maximae medicorum scholae ab antiquo habentur, neminem in medicinali arte, praeter quandam sapientem matronam sibi parem inveniret.*" This was in the year 1059, and Orderic adds that the school was the largest of ancient times. You will note also his "*sapientem matronam.*" Sarton² agrees that Rudolph, or Raoul, Malecouronne was the most important physician in western France during this century, and that he was a student at Salerno between 1040 and 1059, where there was only one teacher wise enough to answer his questions, and she a woman. It is probable that the woman referred to was Trotula, as she was a member of the faculty at that time. Denifle³ says that there were several women on the faculty at Salerno in the eleventh century, but that none was equal to Trotula until a later date. It is a pity that Rudolph did not tell us her name or the subject of their debate; but he was not a writer.⁴ Rudolph practiced medicine for several years but his fame remained local.⁵

¹ Migne, "*Patrologia Latina*," vol. 188, Book III, chap. XI, p. 259.

² Sarton, *op. cit.*, p. 770.

³ Denifle, Heinrich S., "*Die Universitäten des Mittelalters bis 1400*, 1885.

⁴ Guizot, M., "*Mémoires relatifs à l' Histoire de France*," vol. II, p. 64, 1825.

⁵ It is interesting to find that Orderic himself owned as many as one hundred and thirty manuscripts, including a copy of the "Aphorisms of Hippocrates," but he believed more in Divine Providence than in human help in time of sickness.

II. SALERNO—METHODS OF INSTRUCTION

TO one who knows the eleventh century it is not surprising to find Orderic Vitalis asserting that faith in holy relics is a necessary part of medical treatment, for he believed in the efficacy of nothing that did not have the sanction of the Church; but he also confessed that the Church had been obliged to sanction many pagan books on medicine because they had been proved to be good. To students, however, the fear of being considered a heretic was a hindrance. Fortunately the school at Salerno was evidently considered to be a Christian school even though it was not under the control of the Church, and even though, as was the case in 1050, there were six hundred Jews enrolled, and probably as many Arabs. Furthermore, as has been noted, their text-books were, in the main, copies of Hippocrates, Aristotle and Galen, all pagan writers.

Fortunately, also, practical work and bed-side instruction were a part of the Salerno curriculum, students being obliged to visit patients twice a day, and once by night, if necessary, and to give free advice to the poor. Carnoly¹ says that the Jews at Salerno were the best teachers, although "they despised dissection and ignored surgery and scientific investigations." Being good translators, they followed Hippocrates and Galen to the letter in their treatment of patients. All rabbis were obliged to study medicine, this giving them additional prestige. The Arabs, on the other hand, had discovered many new remedies, and were much interested in scientific experiments with medicinal plants. That they were accustomed to women doctors is proved by the fact that sick or pregnant Moslem women were not permitted treatment by men doctors. Buck² says, however, that the women who attended the wives of the Caliphs were much more skilled than the average midwife, evidently making a distinction between obstetricians and "monthly nurses."

There was an early tradition that the school of Salerno was founded by a Greek, a Latin, a Hebrew, and an Arab. The Singers³ suggest that this tradition may have been founded on the general mixture of races which met there. De Renzi says that, of fifteen names on the faculty list in the twelfth century, nine were ecclesiastics, one was a

¹ Carnoly, E., "*Histoire des Médecins Juifs*," 1844.

² Buck, Albert, "The Growth of Medicine from the Earliest Times to about 1800," 1917.

³ Singer, Charles and Dorothea, "Origin of the School of Salerno," Essay on the History of Medicine, presented to Karl Sudhoff, 1924.

Jew, and five were women or Arabs or laymen. The Arabic influence was then paramount; but quacks and charlatans crowded the halls, so that the prestige of the school had dwindled. Its best teachers had by then gone to other schools founded on Salerno as a model. We know, however, the names of three hundred and forty of its teachers, who were active during the thousand years of its existence. Among them, as we shall see, were several women besides Trotula. In later years its library was scattered, the famous buildings were allowed to fall in ruin, and rival schools at Naples, Bologna and Montpellier became more popular because better equipped. Finally, in 1811, by decree of Napoleon, the school ceased to exist.

Because it took the works of Hippocrates as the basis of its instruction, the Salerno school was sometimes known as the *Collegium Hippocraticum*, and the city as the *Civitas Hippocratica*.¹ All teachers were allowed to teach in whatever language they chose. Latin was generally used. Even the Arabs, who came from the Nestorian school in Persia, probably taught in Latin, as did most of the others, including Trotula, who undoubtedly had been accustomed to talk Latin of the easy mediaeval type. Baas calls her "one of the *aerztinnen* who wrote on the sufferings of women before, during, and after child-birth." We can infer, from the various nationalities represented there, that, unless the students had fresh note-books and understood some universal method of abbreviation, their notes of lectures in Latin, or some other language, may have been very inaccurate and puzzling to read. Free interpretations or translations, careless penmanship, lack of clean and good-sized sheets of parchment must have led to the greatest blunders in the writing of their texts.

It is difficult for us to realize what life would be without printed books, but, when we consider the task of writing each page with a poor kind of pen or a paint brush on a surface which may have been previously used and insufficiently cleaned, and in a language but vaguely understood, and about a subject that is more or less technical, we can see how easily errors of all kinds might be amassed. What, for instance, could a pious monk understand of the chapters on the surgery of the perineum as given by Trotula to her pupils? If he were accustomed to Biblical language only, and presumably ignorant of all medical terms, as well as out of touch with all women from childhood, it would be a marvel if he copied the text accurately, even if he understood Latin grammar and

¹ Baas, Joh. Hermann, "*Grundriss der Geschichte der Medicin*," 1876, p. 207.

could write Latin correctly and rapidly. It is therefore not strange that proper names were omitted or misspelled, or the text changed to suit the comprehension of the copyist or student at a lecture. Such, however, was the material used at the early school at Salerno. Evidently, along with tradition, superstition, and astrology, much common sense guided the teachers in their work, or the school could not have become so justly famous. The students, like the teachers, came from all over the known world to this coeducational school. They may have memorized the lectures, or borrowed one another's book, or consigned to their own, with journalistic freedom, all the misunderstandings and loose interpretations of which students are capable, omitting proper names and dates as quite superfluous. Even with imperfections, however, these old note books would be valuable to us today; but, when vellum and paper were scarce and palimpsests common, it is no wonder that such manuscripts were not preserved. The literary remains of the Salerno school are, unfortunately, extremely fragmentary. De Renzi,¹ the great collector and exponent of them, found several manuscripts of the early Salernitan period,² and of Monte Cassino, in various libraries of Europe, some of them badly mutilated, and those of Trotula evidently entirely lacking in parts. Medical students and teachers were distinguished by their special gowns, those of the men and women being nearly alike.³ When Robert Guiscard lived in Salerno, however, any men or women, Jews, Arabs, or Christians, who had a smattering of medical knowledge, either of herbs or of blood-letting, might wear the significant mantle, and set themselves up as apothecaries, or urine testers, or teachers, or healers, and draw a crowd of students and patients, as is done in Morocco today. Of the diseases they were called upon to treat Orderic Vitalis gives an account, although he tried to limit himself to those of royalty. He tells us that deaths were mainly due to dysentery, diarrhoea, and leprosy. One king died from eating a poisoned apple given him by his wife, another died from the wound of a poisoned arrow, many unwittingly drank poisoned wine, while thousands of their subjects died

¹ De Renzi, Salvatore, "*Collectio Salernitana*," Five Volumes, 1852-1859.

² The oldest medical codex of Monte Cassino yet discovered dates from the ninth century, and the second is from the tenth. In the first there is a collection of prescriptions copied from various authors, followed by a treatise on the diseases of women, one also on fevers, two excerpts from Hippocrates, and several articles on diet, baths, exercise, etc. In a later codex, De Renzi found references to the writings of Gariopontus and Trotula, and one bearing the stamp of Constantine, the African, whom Singer considers the greatest plagiarist of all time, but yet a Salernitan of the eleventh century.

³ Giascosa, Piero, "*Magistri Salernitani*," nondum editi, 1901.



A WOMAN APOTHECARY (OR DOCTOR) AND A KING.

Possibly a representation of Trotula and Robert of Normandy, 11th Century, as the background shows the castle, cathedral and medical school at Salerno. (Courtesy of Charles and Dorothea Singer).

from the plague or from injuries. This gives us some idea of the medical situation as it existed in the western world during the eleventh century.

III. SALERNO—ITS TEACHERS AND WRITERS

AMONG the earliest clerical Greeks who were teachers in the medical school at the beginning of the eleventh century was the archbishop Alphanus, who wrote a book on the four humors, and called it the "*Speculum Hominis*." Singer says that this was a rough translation from Nemesius, of the fourth century, on the nature of man—the first medical book translated anonymously at Monte Cassino. There were two archbishops named Alphaneus, or Alphanus, at Salerno; and their writings are often confused. Cumston,¹ quoting Leo of Ostia, tells us that Desiderius of Monte Cassino went down to Salerno to consult Alphanus II, who died in the odor of sanctity in 1085, "*prudenter et nobilissimus clericus*," and Peter the Deacon says that it was he who wrote the "*Speculum*." However, to one or the other was due the founding of a new monastic library.

Among the other early Greek teachers at Salerno were Damnastes, who abbreviated the work of Soranus and Cleopatra on gynecology; a Dioscorides of Lombardy, who patched and cribbed a book on medicinal herbs; and Bishop Theobald, who wrote a monumental work in verse, a sort of rhymed Bestiary taken from the twelve beasts of the Apocalypse, but including also sirens, centaurs, stags, and lions, with all their spiritual meanings, as well as all sorts of other animals from spiders to the great whale.

Salerno's text-book on food and diet was written by Simeon Seth, a Byzantine encyclopaedist, who used Persian, Indian, and Arabic sources. It mentions for the first time camphor, musk, cloves and nutmeg.² Donnolo, a Jew called the "little master," translated into Hebrew whatever medical manuscripts the Jewish students needed; and, about a century later, Constantinus Africanus (died at Monte Cassino in 1087) translated medical works from Greek and Arabic into Latin, with the help of a corps of assistants, among whom was John the Saracen, the author

¹ Cumston, Charles Greene, "Introduction to the History of Medicine . . . to the End of the Eighteenth Century, 1926, p. 214.

² In this book we stumble upon a superstition still existing in many parts of the world today, that violet plants or roots, combined with caustic pastes and deodorants, are a cure for cancer.

of a book on the urine and one on fevers.¹ Both were propagandists for Arabic medicine.

Obviously almost every known medical subject had been taught at Salerno even before its reorganization in the middle of the eleventh century, when, among its new faculty, were John Platearius, and his wife Trotula, and their son John, all three of whom worked on a new encyclopaedia of medicine called the *Practica Brevis*. Evidently they were all members of the staff, Trotula being called *Magistra Medicinæ*, the author also of a famous work on obstetrics and gynecology. John, the younger, wrote a book on the urine, the *Regulae Urinarum*. Another member of the first faculty was Gariopontus (died about 1050), who seems to have lost something of his identity in a maze of copyists and followers. Capparoni suggests that he was a German called Guarimpontus; Haesar calls him a Lombard; Singer questions whether or not he may have been actually Peter Damianus, or Peter the Deacon, who died in 1087; and Sarton suggests, on the other hand, that this Peter, or Petrocellus, was merely the colleague and assistant of Gariopontus, who helped collate and compile the "*Passionarius Galeni*" on internal medicine from Greek, Latin and Byzantine sources. De Renzi found two documents, one of 1051, the other of 1079, which mention "Guarimpoto" as probably the old and well-known Salernitan writer referred to by Peter Damianus as the author of the "*Passionarius*." Peter describes himself as a mere scribe, and a "doctor" or teacher at Salerno.²

Nicolaus of Salerno was perhaps Dean, or Praepositus, of the school in those days, or possibly later. He has been unfortunately confused with Albucasim, an Arab who died in Cordova in 1009, because each compiled an "*Antidotarium*" showing many Arabic influences. One or the other "*Antidotarium*" was used anonymously as a materia medica at the school for centuries.³ Sarton places Nicolaus in the twelfth century, along

¹ Sarton, *op. cit.*, p. 651, says of Donnolo and others like him, that they acted as a ferment amidst the mixed population of south Italian harbors. "Probably to them is due the birth of the school of Salerno, the earliest original school of medicine in Christian Europe."

² Both Peter and Gariopontus subscribed to the popular theory that the marrow of a tooth came from the brain, and was connected with the lung. This precluded the extraction of a tooth for fear of injuring the other organs. If practitioners had obeyed Galen, they would have tried to ascertain the correctness of such a theory, not merely to make conjecture about it.

³ Osler says that this (?) "*Antidotarium*" was one of the earliest books to be translated into Latin, and the earliest complete and dated medical book ever printed (1472), adding that Nicolaus had copied his material from Paul of Aegina, Hippocrates, Galen, and Alexander of Tralles, but with Arabic additions. The author tells us that his reason for giving so long a list of remedies was in order that his followers might substitute a "*quid pro quo*," as many of his students wished to do.

with several members of the Platearius family; but it would seem better to place him in the early eleventh, because Constantine, the African, apparently copied many remedies from Nicolaus (or Albucasis). Nicaise and Mazza, on the other hand, place Nicolaus in the early tenth century.¹

As for Constantinus Africanus, the best known of all the Salernitan school of writers, it may be noted briefly that he was born in Carthage in 1015, travelled widely, became secretary to Robert Guiscard in Salerno, retired to Monte Cassino with his collections of manuscripts for translation, and died there in 1087. Singer says of him, "In the process of falsification of editorship. . . the early Salernitans were triflers in the art of forgery. Their achievements are insignificant compared with the master hand of Constantine." Meyerhof calls him a renegade Moor from Carthage.² Peter the Deacon tells us, on the other hand, that Constantine was thoroughly learned in the physic of the Chaldeans, Arabs, Persians and Saracens, and that he had studied in India, Ethiopia, and Egypt. When he returned to Carthage, after thirty-nine years of wandering, his compatriots sought to kill him as a heretic; but he was able to escape to Salerno, where he lived a gay life at the court of Robert. Singer says that Constantine knew little Latin and less medicine, drawing mainly from Isaac Judaeus and other Jewish and Arabic predecessors. Neuburger adds that he owed much to Haly Abbas, Joannitius Honein³ and other Arabs. There is in the British Museum a little volume of Joannitius, printed in the sixteenth century in black Gothic letters with red capitals and bound with Avicenna, on fevers, Theophilus on the urine, and a few extracts from Galen. This is probably a copy of one of the text-books of a Salerno student of the eleventh century.

As for the books written by the Platearius family for their students,⁴ the "*Practica Brevis*" and the "*Circa Instans*"—texts on the diagnosis and treatment of disease—these, we know, were studied with care, and their teachings practically applied,⁵ while the books on gynecology and obstetrics compiled by Trotula, if not always copied with her name, con-

¹ Nicaise, E., "*La Grande Chirurgie de Guy de Chauliac*," 1363, Paris, 1890.

² Meyerhof, Max, *Isis*, vol. XII, 1929, p. 119.

³ The book of Joannitius Honein, a Persian Nestorian who lived A.D. 809-877, was one of the most important text-books of the Middle Ages. It was called the "*Ysogoge*" or "*Articella Galeni*," and was written in Arabic for the students of his own school. His introduction to Galen's "*Ars Parva*" was incorporated as an integral part of Constantine's "*Articella*."

⁴ Dorveaux, Paul, "*Le livre des simples médecines de Platearius, Circa Instans*" (From a manuscript of the XIII Century) 1913.

⁵ Baccius, Henricus, "*De Scriptori Reg. Napol.*," p. 303.

tinued to be consulted by women doctors and midwives for seven hundred years. Unfortunately, as the years passed, these works became confused with others; and, as copyists grew careless with the names of authors, the work of Johannes Platearius became known under the name of an Arab, Serapion, while Trotula's were supposed to have been written by a certain Eros, or Erotian, of early Christian times. Thus history almost obliterated the identity of Trotula and her husband while preserving their books.

Before the end of the twelfth century there were many other writers and teachers at Salerno; but none was as important as those of the eleventh century, for the best of the students had been drawn to the newer medical schools in Bologna, Montpellier, and Naples. Two descendants of the famous Platearii, Roger and Roland, became the most important surgeons of their time, taking a stand for extreme cleanliness, and for union of the edges of a wound by first intention, thus becoming the forerunners of Guy de Chauliac, the great surgeon of the fourteenth century.

Several medical historians have referred to the "famous quartette of Salerno in the eleventh century." To Gurlt¹ they are: Gariopontus, who wrote the "*Passionarius*"; Peter the Deacon, who assisted him and wrote a "*Practica*"; Trotula, who wrote a treatise on diseases of women compiled from Cleopatra, Soranus and Hippocrates; while the fourth seems to have been Roger, the surgeon. Other historians have named Constantine or Platearius or Cophon the anatomist. Still others bring in the Arabs, Avicenna and Averrhoës, along with Arnold of Villanova, to whom is given the credit of turning the great Salerno encyclopedia of medicine into rhyme. From time to time, new material was being incorporated into the best of the old, or being reinterpreted in new terms to meet new student needs. This sort of plagiarizing was condoned by John Stuart Mill, as being an effort to bring the best of early thought to bear upon modern problems. In the last analysis, he claimed, nothing really new and valuable is spun from the author's personality like the web of a spider from its own interior.

At any rate, for good and sufficient reasons, this coeducational school at Salerno was justly famous for two hundred years. Roger the Norman gave it a large grant of land and revenues, and, in order to weed out impostors, Frederic II (1194-1250)² in 1240 established a regis-

¹ Gurlt, Ernst, "*Geschichte der Chirurgie und ihrer Ausübung*," 1898.

² Frederic II was one of the Holy Roman Emperors, King of Sicily and Jerusalem.

try for physicians who had passed certain examinations there. Daremberg says that the title "doctor," meaning physician, was first used legally at Salerno, in 1180, and was quoted by Roger of Parma. In the fourteenth century a new king, named Robert, enlarged the curriculum; and still later two queens, Joanna I and Joanna II, insisted upon making the courses more difficult in order to raise the standing of the graduates.

Many famous scholars besides Rudolph Mala Corona made pilgrimages to Salerno in the eleventh century, among them Lanfranc (1005-1089), a monk of the monastery of Bec in France, and later Archbishop of Canterbury. He took the hospitals of this *civitas Hippocratica* as the model of his hospital at Canterbury, the first general hospital to be built in England. It is interesting to find that Lanfranc was so annoyed by the errors made by the monks in the copies of his works that he always insisted on revising each page personally. His successor, Anselm, who died in 1109, was also an interested visitor at Salerno; and so was Peter the Lombard (died 1164), the renowned logician who wondered what physical operations went on in Paradise, and how many angels could stand on the point of a needle. In the following centuries, St. Thomas Aquinas (1227-1274), and Michael Scot (died in or before 1235), the astrologer, both studied at Salerno. It was Aquinas who said that in his time there were four famous colleges in Europe: Paris for science, Salerno for medicine, Bologna for law, and Lyons for philosophy and grammar. In the fourteenth century Petrarch, during a sojourn in Salerno in 1330, praised its medical school in the highest terms, writing, "*Fuisse hic medicinae fontem fama est.*"

Finally, in the seventeenth century, Mazza, a native of Salerno,¹ wrote a history of the town, in which he said that in every century famous students had been drawn to its medical school; adding significantly that, among all the ancient teachers, the *most important were women!*

IV. TROTULA AND HER WORK

FORTUNATELY, we know the name of the most noted of the medical women at Salerno in the eleventh century, Trotula (also Trotta, Trocta, and many other forms of the name).² In the old

¹ Mazza, Antonio, "*Historium Epitome de Rebus Salernitanis*," 1681, p. 128. See also Tiraquellus, "*De Nobilitate*," 1566, Book II, Chap. 12.

² Speaking of Trotula's family history, Haeser says, p. 119: "*Johannes Platearius I. ist der begründer einer berühmten Salernitanischen Familie von Aerzten;—Trotula, vielleicht seine Gattin, ist die älteste und berühmteste der medicinischen Lehrerinnen von Salerno. Sie verfasste ein die ganze Medicin abhandelndes Compendium, von welchem die von den Krankheiten der Frauen handelnden Abschnitte auf uns gekommen sind.*"

obituary lists of the great cathedral the names Trotta and Trocta occur frequently; and, among the number, was one who died in 1085 and another in 1097, but no marks of identification are given of either. Since, however, the identity and even the actual existence of Trotta, or Trotula, the author of "*The Trotula maior and minor*," has been doubted by some historians, her story must be told in considerable detail in order to prove that she was a very real person of the eleventh century, a *magistra medicinae*, and not an ordinary midwife, or even a mythical person, as has been suggested; and that the book which was for centuries attributed to her was authentic, and not written by a man.

Henricus Baccio, or Baccius, of Naples tells us that she was called Trottola di Ruggiero (that is, a Roger by birth), and De Renzi adds that she was the wife of John Platearius the Elder. Their son, Matteo, spoke of her as his "learned mother, Trocta," and "*mater magistra Platearii*," and of his father as Johannes, "who with her help wrote a book on the cure of disease"; and Matteo also said proudly that his mother had looked after sick women as a "*magistra*," not as an "empiric." In 1097 a certain Ruggiero, lord of the castle of Montuori,¹ left a donation for his noble mother, Trotta, who may have died that same year. By her contemporaries, Trotula was known as the "*Magistra*," "*Uxor Platearii*," "*Mulier Sapiens*," "Trotta" or "Trocta." By her followers who quoted from her writings, she was called Tortolo, Trocula, Tuenda, Trotta, Trotula, Trocta, Trottus, trott', tt', Truta, Trutella, Trorula, Tortula, Eros Juliae, Erotian, "one" of the women of Salerno; and lastly, in derision by a few modern writers, she has been dubbed Old Dame Trot. Some of these names we will discuss later, especially the last; but here it may be said that her contemporary relative, Cophon, the anatomist, while lecturing in France, mentioned her with pride. He said that physicians should use the remedies that were praised at Salerno, especially those of Trotula, to which some apparently stupid copyist added "one of the Saracenic women." John of Rhodes, at the same time, did her the honor of copying her text almost verbatim, but anonymously. In 1916 Dr. Capparoni² discovered certain old manuscripts in Salerno, among

¹ Garufi, C. A., "*Fonti per la storia d'Italia. Necrologie del Liber Confratrum de S. Matteo di Salerno*," 1922.

² "*Trotula de Ruggiero, gentil Donna de Salerno, lesse Medicina nella sua Patria e diede alle stampe un'opera, "De Morbis Mulierum" . . . che retrovasi nella studio del Sig. Duca di Diano, donde è stata rubbata, che però non posso soggiungere l'anno dell' impressione nè dello stampatore, viene citata e connumerata tra le Donne Illustre, dall' eruditissimo Tiraquello.*" Welcome Historical Medical Museum, London, *Research Studies in Medical History*, No. 2, *Magistri Salernitani Nondum Cogniti*. Peter Capparoni, who wrote these lines, was Secretary of the Sanitary Dept. of the Historical Society of Italy, 1923.

them a sort of "Who's Who" of the famous school; and here and there he found the names of Gariopontus, Trota, Trocta, Roger, Roland, and William of Salicet, most of them authors whose books were known by their own names, the "*Trotula*," the "*Rogerina*," the "*Rolandina*," etc. Sarton tells us that it was the fashion in the Middle Ages to be called by nicknames, or different names, in each language; and, as we have already seen, copyists made such bad work with names that the fact that Trotula's name appears in various texts under all sorts of variant forms is no reason whatever to doubt her existence—quite the reverse. Nor have those who call her by the masculine form of her name, Trottus, any real authority for so doing. There was a Trottus in the Middle Ages, whom we know as an author of theological works, having in them a little medical addition on the care of the eyes, but his style and language differ markedly from Trotula's. Among the other forms of her name found in various texts is "Tortula," occurring in Bernard of Provins, who, from 1150 to 1160, was one of the teachers at Salerno, and must have known people who had known her personally. He incorporated so much of her writings with his own that it is now difficult to distinguish the two. A hundred years later, Peter of Spain, who in 1276 became Pope John XXI, wrote his "*Thesaurus Pauperum*," a handbook of diseases and remedies, in which Trotula is mentioned as "Trocula"¹ five times, with quotations from her famous prescriptions. The "*Thesaurus Pauperum*" was printed in 1530. The copy in the British Museum is a little, worm-eaten volume of some sixty pages in fine print. Its Latin is difficult in places because of abundant abbreviations; but there is no trouble in reading the proper names of the writer's authorities, and along with Dioscorides, Avicenna, Galen, Isaac, the "*Circa Instans*" of Matthias Platearius, etc., etc. he repeatedly cites "Trocula."² This author always indicated his own approval of a remedy by following his quotation by "*Hoc ego*," and this "*Hoc ego*" was added to each of "Trocula's" prescriptions. Obviously she was well known to him by reputation.

Peter is more of an endocrinologist, and much more of a believer in charms and magic than she. He tells us, however (p. 36) that Trotula's

¹ In medieval manuscripts, *t* is easily confused with *c*; hence *Trocula* for *Trotula*. See also Hurd-Mead, Kate C., *Isis*, vol. XIV, 2, 1930, and Hurd-Mead, "*Trotula, eine Salerner Ärztin*," *Die Ärztin*, Berlin, Jan. 1931.

² Roger of Salerno was probably a grandson of Trotula. Sarton, (vol. II, p. 435), says that his "*Practica Chirurgiae*" is the earliest surgical treatise of the Christian West; he adopted many of Trotula's operative teachings as well as those of Constantine. See DeRenzi, vol. 2, pp. 426-496.

treatment for curing sterility is to eat the powdered testicles of a boar; but that, to ensure sterility, the patient must carry in her pocket the dried uterus of a goat. He quotes freely from her prescriptions for the complexion. From that "arch plagiarist, Constantine the African" (Singer), he takes Trotula's treatment of suppressed menstruation by hot drinks, by warm poultices to the abdomen, and by fumigations to the nose and vulva. He approves by his "*Hoc ego*" of her use of suppositories of plantain leaves, red dog-berries, sanguinaria and oak galls for profuse menstruation, and of her mallow poultices for tumors of the breast (taken by her from Dioscorides).

There has been found a manuscript dating from the thirteenth century, which is a French translation of Trotula's book on gynecology, with its prologue almost verbatim. This is perhaps taken from a copy made by the nun Guta, mentioned by Bernard of Provins, and said by Hamilton¹ to be the basis of many later editions. In the fourteenth century there are many evidences of the popularity of Trotula's writings. Among the books mentioned by Chaucer in the "Prologue" to the "Wyf of Bath's Tale"² we find Trotula; and indirectly we may surmise that the Doctor of Physic also had one of her books, for Chaucer says of him, "Well knew he the old Esculapius," to which Manly adds in a note (p. 526), "Even in the case of the 'old Esculapius' the allusion is probably....to '*Esculapii de Morborum....Origine*,' which, with the '*Trotulae curandarum aegritudinum mulierum...lib.*,' formed the '*Experimentarius Medicinæ*.'" We find, also in the "Prologue" to the "Wyf of Bath," that, among the books which her fifth husband read day and night, "whan he hadde leyser and vacacion," was a certain volume containing "Tertullan, Crisippus, Trotula, and Helowys," etc., to which Manly adds a note (p. 582), "The Wyf of Bath was fairly familiar with the contents of her husband's books....Trotula was a famous woman, associated with the great medical school of Salerno." Manly then refers us to Hamilton, who says that in most of the libraries her books are referred to as "*Trotula Major*" and "*Minor*," or as "The Trotta" and "The Trotula"; but that, as time went on, they were gathered into one volume, and somewhat abridged, although still frequently copied.

That the copyists took great liberties with the works from which they quoted we have already seen. Choulant¹ says that at least one of the

¹ Hamilton, Geo. L., *Modern Philosophy*, Vol. IV, 1906-1907, p. 377.

² "Canterbury Tales," by Geoffrey Chaucer, Introduction, Notes, and Glossary by John Matthews Manly, 1929, pp. 160, 293.

copies of Trotula was made by a woman doctor of the thirteenth century (may it have been the nun, Guta, of the twelfth?), who took the usual liberty with the original, adding several later Arabic remedies, and changing the style to suit her own times. Hamilton says that this version of Trotula was the one used by translators. Spitzner² says that such a French translation was made in the fourteenth century, and that in a pseudo-text of Albertus Magnus, the "*Secreta Mulierum*," Trotula was highly praised: "*Premièrement je vous di que une feme qui fu philosophe appelée Trotula, qui mout vesqui et fu moulte belle en sa jeunee, de la quelle li phisicien qui riens sevent tiennent moulte d'auctoritez et de bons enseignemenz, nous dist une partie des natures aus femes*," etc. This reference shows that even at that time Trotula was considered an authority.

In James's catalogue³ of the manuscripts used in the libraries of Canterbury and Dover before the days of printing are listed many volumes of Trotula. Among the chained manuscripts in the Dover Priory (No. 347, p. 481), was a volume containing the "*Sirurgia Rolandi*," "*Tabula Platearii de herbis*," "*Quid pro quo*," "*Trotula maior*" (beginning, as is usual, with "*cum auctor universitatis Deus*"), "*Alphita vel sumonoma*," "*Circa Instans*," "*Epistola albrici de herbis*," and the "*Thesaurus pauperum*." In No. 337 was a "*Parvus Gyrardus*," and in No. 355 a "*Gyrardus magnus*" (translations made by Gerard of Cremona, a famous writer), along with "*Trotula maior*" and other Salernitan writings. In the catalogue of the Abbey of St. Augustine at Canterbury, James found several manuscripts of Constantinus in one of which (Fol. 85, pp. 334-335), were bound manuscripts of Soranus and of Cleopatra, the gynecologist. In Fol. 88, No. 1219, is "*Trotula maior de curis mulierum*." Fol. 89, No. 1225 has "*Trotula minor*" and "*Genecia Cleopatre et dialogus muscionis et est de officio obstetrices*."

There were one hundred and two medical books in this library before the fire of 1067; and, though in 1186 the library was burned again, it contained in 1539, when the monastery was suppressed, three thousand books, mostly manuscripts. If we look through James's catalogue of the library of Christ Church, A.D. 1170, we find the titles of several Salernitan books. On page 56, No. 475, is a Breviary (No. III), bound

¹ Choulant, Ludwig, "*Jahrbuch f. d. deutsche Med.*, vol. III, p. 144.

² Spitzner, Hermann Rudolf, "*Die salernitanische Gynäkologie und Geburtshilfe unter dem Namen der Trotula*," Inaugural Dissertation, Leipzig, 1921, p. 38.

³ James, Montague Rhodes, "Catalogue of the Ancient Libraries of Canterbury and Dover," 1903.

with "*Practica domine Trote ad provocanda menstua.*" In No. 447 is the title *Tractatus de ornatu mulierum*, ascribed to Platearius rather than to its rightful author, Trotula, his wife. No. 495 contains Trotula's treatment for dropsy and fever, taken from the "*Genecie Cleopatras ad Theodatum.*" No. 496 is another book which Trotula used freely, the "*Liber Galieni,*" and containing also the gynecology of Soranus, all of whose methods she followed except his podalic version. In No. 511 we find the "*Summa de viciis matricis*" which contains the familiar "*Liber de aegritudinibus mulierum*" and the "*De curationibus mulierum*" of Trotula.

Spitzner¹ has given us the names of several Trotula manuscripts now in the libraries of France, Belgium, Germany, Austria and England. The oldest yet discovered is one in a library at Breslau, probably of the twelfth century, although De Renzi speaks of its Latin as of the eleventh century, and its penmanship as in the Beneventan script of the tenth. This manuscript is a copy of the "*Practica of Salerno*" containing the "*Trotulae mulieris Salernitanae de curis mulierum.*" Other manuscripts in Breslau contain her "*De*

¹ Spitzner, *loc. cit.*, pp. 19-21, gives us the following incomplete list:

Manuscripts of the thirteenth century:

- | | |
|-------------------------------|---|
| Brussels, Bib. Royal, 14339. | <i>De cura Trotula</i> , beginning " <i>Cum auctor</i> " etc. |
| Montpellier, No. 317. | <i>De cura Trotula</i> , beginning " <i>Cum auctor</i> " etc. |
| Cambrai, No. 916. | <i>De cura Trotula</i> , beginning " <i>Cum auctor</i> " etc. |
| Oxford, No. 1427. | <i>De cura Trotula</i> , beginning " <i>Cum auctor</i> " etc. |
| Leipzig, No. 1215, A.D. 1300. | <i>Trotula bonae matronae de aegritudinib.</i> , etc. |

Manuscripts of the fourteenth century:

- | | |
|---------------------------------|--|
| Breslau, Codex XXXII. | a. <i>Liber de passionibus mulierum</i>
b. <i>Trotula minor.</i> |
| Cambridge. | <i>Trotula, De passionib.</i> , beginning " <i>Cum auctor</i> "... |
| Brussels, Nos. 14325 and 15486. | <i>Trotula, De passionib.</i> , beginning " <i>Cum auctor</i> "... |
| Munich, No. 570. | <i>Trotula, De passionib.</i> , beginning " <i>Cum auctor</i> "... |
| Rouen, No. 981. | <i>Trotula, De passionib.</i> , beginning " <i>Cum auctor</i> "... |
| Carpentras, No. 320 (?). | Fragment, <i>Trotula, De passionib.</i> , beginning " <i>Cum auctor</i> "... |
| Breslau. | <i>Practica</i> and <i>De ornatu mulierum</i> (III. F. 10). |

Manuscripts of the fifteenth century:

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|--------------------------------------|--|
| Munich, Nos. 660 and 3875. | <i>De secretis mulierum secundum Trotulam.</i> |
| Vindob, No. 5388, A. D. 1444. | <i>De Mulierum aegritudinibus.</i> |
| Wolfenbüttel, No. 875. | <i>De Mulierum aegritudinibus.</i> |
| Paris, Bib. Nat. No. 1327. | <i>Du régime des dames pour leur aydier en leur maladie</i> , etc. |
| Paris, Bib. St. Geneviève, No. 1037. | <i>Fragment de tradition française.</i> |
| Laon, No. 418. | <i>De passionib. mulier.</i> |
| Wiesbaden, No. 56. | <i>Trotula, et Arnold-Villanova. "Nota, aliqua de Trotula excerpta."</i> |

mulieris passionibus ante, in, et post partum"; and the University library there has several other Salernitan manuscripts. One, of the fifteenth century, is in clear cursive Latin; and, besides Trotula, it has, bound with it, thirty other well known authors, including Constantine and Arnold of Villanova. In the Stadtbibliothek of Breslau, there is a manuscript (No. 291) of the fourteenth century, containing twenty-three pages, very closely written, in which Trotula is called Truta and Trutella, evidently through blunders of the transcriber. In a manuscript of the sixteenth century, also in the Stadtbibliothek, is a German translation in which she is called Trorula. In this copy appears a portrait of Trotula, as a teacher holding a long white scroll and standing in a pulpit. In another picture three students are facing her as she lectures, dressed in a long blue robe with a handkerchief folded over her brown hair. In this manuscript the copyist has repeated several times "*Explicit Trotula cum Trota,*" and finally, "*Explicit Trotula, Amen.*" These manuscripts vary so little from each other that it is impossible to doubt that they are authentic copies of still older manuscripts.

The Vienna Bibliothek des Pallavicinischen Palastes, the national library, has, among its 30,000 manuscripts, a codex (No. 5,388), in which we find: "*Explicit Trotula de aegritudinibus mulierum et earum curis,*" and the signature "*trotula scriptum.*" This copy begins, as do all the others, with the sentence: "*Cum auctor universitatis deus*" and is written in a nervous and trembling hand. Many headings of chapters begin: "*Sunt quaedam mulieres qui,*" etc. In the same library (Codex 11,168), is a German translation of 1570, beginning: "*Hie heben sich an die Capittel über die Bücher Trotula, Macrobi, Gilbertini,*" etc. This book was re-translated in 1590 by Doctor Hardtlieb for a woman who owned the original. It has seventy chapters, and is dedicated to the then ruling prince.

Several Trotula manuscripts are to be found in Paris¹. In the Bibliothèque Nationale, Nos. 6,964 and 705 are of the thirteenth and fourteenth centuries. The first is the "*Summa quae dicitur Trotula,*" and the second contains her surgical teachings as explained, or copied, by her grandson, Roger, the surgeon of Salerno. In another Codex in this library, De Renzi found a copy of the "*Liber passionibus mulierum secundum Trotulam,*" bound with a book on practice by Bernard Gordon, and the "Synonyms" of Nicolaus. This probably dates from the early part of the fourteenth century. Another (No. 8,654), is in the same

¹ These seem to differ from those on Spitzner's list.

handwriting, and begins: "*Trotula maior quaedam sunt mulieres in utilis ad conceptionem*," etc. The authorities quoted in her text all lived before the twelfth century, and may have been her friends, or have been quoted from her own text-books.

Finally, in the British Museum there is a little old volume of 227 pages of manuscript, about $4\frac{1}{2} \times 7$ inches, worm-holed and dingy, with interlineations and underlinings in red, and with notes on the side in a different hand and written with a different kind of ink. Page 169 begins: "*Incipit le lev. trotule & Secretis mulier.*" Another page (173 rev.) is crossed out, to indicate that it was wrongly copied. The writing of this volume is somewhat scrawling and difficult to read; but, beginning with p. 174, there are several chapters by Cophon, also interlined and criss-crossed by some former owner, and with here and there a few words in English. The last chapter has illustrations showing the various colors of urine in flasks, the typical bottles that always were sent to the physician for diagnosis. The binding of this old volume is loose, and the pages are dog-eared and were mended clumsily hundreds of years ago. Of the many other Salernitan manuscripts in the libraries of Great Britain, mention should be made of one in the British Museum (Sloane 3,525), because it confuses Trotula and Eros, which, as we shall see, was often done in the printed editions of her work. In this manuscript we find, "*Trotta vel potius Trotula, Fabricius haec habet Trotula, quae et Erotis dicitur.*"

In short, we may say without fear of contradiction that, for nearly five hundred years after Trotula's death, her writings were highly prized, and had a wide distribution. From no source whatever up to this point does there appear to have been any doubt of her identity, or any question that she was the author of the works attributed to her.

V. THE PRINTED EDITIONS OF TROTULA

IN the fifteenth century the first printing presses were set up in Europe for the general multiplication of books by an easier method than by the pen or brush; and no less than twenty editions of the "*Regimen Sanitatis Salernitatum*" were printed before the year 1500. Some of these bore the title "*Fls Medicinæ Salerni.*" To the original compilation of this work, as we have seen, Trotula contributed largely.

The first printing of her gynecology, the "*De Passionibus Mulierum*," under her own name, came from the press of John Schottus, in

1544. Schottus informs the reader that Trotula was a great and learned woman, "as may be seen from the twenty chapters of her book," called the "*Experimentarius Medicinae*."¹

He expands the title in explanation of its contents: *Trotulae curandarum aegritudinum mulierum, ante, in, & post partum Lib. unicum, nusquam antes editum. Quo foemini sexus accidentes morbi ac passiones, Infantum & puerorum a partu cura, Nutricis delectus, ac reliqua ijsce adnata, Dispositiones utriq. Sexui contingentes, Experimenta denique variarum aegritudinum; cum quibusdam medicamentis decoratione corporis inservientia, edocentur.* Schottus refers to the editor of the book, George Kraut, as a most learned and skilful doctor; and he in turn characterizes Trotula in the following words: "*Quae vero haec fuerit Trotula, certe non vulgaris, quinimus multae peritiae et eruditionis foemina.*" The volume is a large folio, beautifully printed. It contains also the *Materia Medica* of Oribasius, Theodoric on diet, Aesculapius on the treatment of disease, and four books of Hildegard.

The prologue to "*In Trotulae Librum de Passionibus Mulierum*" begins, as it did in the manuscripts, with the summary that, when God made men and women, He endowed both with reason, intellect, and freedom, but that to women He gave weaker bodies than to men, and cold and moist natures rather than hot and dry (this following Galen). The key to her first chapter is always, "*Cum auctor universitatis Deus,*" etc.

Ten years after this volume was published by Schottus, in 1554, an edition of Trotula was published in Venice by Victorius Faventinus.² He also praises her and her work in the highest terms. He says that he has personally tested many of her remedies, and that her work had never before been published (as Schottus had also said in 1544!)³. It contains her chapters on parturition, the care of sick children, the choice of a nurse, the treatment of the complexion, etc. Faventinus calls particular

¹ Trotulae: "*Experimentarius Medicinae*," etc., Argent. [Strasburg], apud Joannem Schottum, Anno Christi M.D.XLIV.

² Victorius Faventinus, "*Empirica*," Venice, 1554. Faventinus says in the prologue, "*Trotulae antiquissimi auctoris curandarum aegritudinum muliebrium liber unicus.*"

³ Spitzner in his "Dissertation," 1921, gives us this list of the printed editions of Trotula: Strasburg (Schottus) 1544; Venice, 1547; (Faventinus) 1554; Aldus, 1554; Paris, 1550; Basel (Wolff), 1566 (ed. Th. Guarinum), (ed. Caspar Bauhinus), 1568; Strasburg (Spach) 1597; a German translation by Sylvester Hardtlieb in 1590, together with "*Secretis Mulierum*" by Albertus Magnus (?); Leipzig (Kornmann—an edition based on the Aldine), 1778. Spitzner admits that in these various editions there is very little difference in the text and none in important points.

attention to her use of fumigations to carry sweet odors to the nose, acid vapors to the vulva to cure prolapsus uteri, her use of spicy drinks and friction of the abdomen to mitigate the pains of labor, and the use of oil of savin to provoke labor, or to cause abortion in necessary cases. He was, however, more of an advocate of phlebotomy than Trotula, and for this and other reasons he says that he had added "certain inventions of his own, for the glory of the Venetian Republic and of the reigning Pope."

Still another early printed book in which Trotula is mentioned and praised is the "*De Nobilitate*" of Tiraquellus¹, published at Lyons in 1566. Tiraquellus compiled a sort of "Who's Who" of the great people of history. In his chapter on "*Foeminae Medicae*" he gives a list of medical women mentioned by classical writers, and includes Trotula, whom he calls, "*Trota, sive Trotula Salernitana, quae morbos mulierum et eorum curam scripsit.*" "Tiraquellus justly praised Trotula," says Toppius², "*Trotta quem alii Trotulam vocant, miris sane encomiis celebranda ut notavit Tiraquellus.*" He carefully differentiates women doctors from nurses and midwives; praising the "*parabolanæ*" who went daily to the hospitals visiting the sick and treating them "with kindness and with skill."

Notwithstanding all this weight of evidence in Trotula's favor, the opposing argument should be at least summarized. In 1566, Wolphius, or Wolff, of Basel, published an edition of her gynecology in which for the first time we find a title page attributing the work to "*Eros quem inepte Trotulam nominant.*" This title was copied by Wolff³ in 1586 in Gesner's "*Gynaecia*," with the addition "*longe quam ante emendatior.*" In other words, through many editions of her works Trotula was Trotula: now abruptly, without any explanation, she is said to be a man, Eros Juliae, a freed-man of the time of Augustus. Melzi⁴ assures us that this imputation was simply a gross error. He quotes Columella

¹ Tiraquellus, Andreas, "*De Nobilitate*," Lyons, 1566. Tiraquellus was a great lawyer and jurist, a French Count of Poitou. He died 1558 at the age of eighty, leaving forty-five children by his two wives, one of whom published this book after his death.

² Toppius, Nicolas, "*Biblioteca Napolitana*," 1678.

³ Wolff, "*Erotis Medici Liberti Juliae, Quem aliqui Trotulam inepte nominant, Muliebrum Liber*," Basel, 1566.

⁴ Melzi, Gaetano, "*Dizionario di opere anonime e pseudonime di scrittori italiani*," 1848, vol. III, p. 178. Columella suggests that Trotula dictated to a scribe, as was commonly done, and for this reason used the third person singular instead of the first. He adds that it was Tomaso Bartolino, in his "*Legendis Libris*," who first falsely attributed Trotula's writings to Eros Juliae. (Cf. Tomaso Guarino.)

who says, "Those who call Trotula a man are wrong"; and he cites her own autobiographical notes in proof that she had studied medicine to help other women, and at their urgent request.¹ But from the date of Wolff's edition on there have been skeptics², or "unchivalrous mythoclasts," who, as Osler puts it,³ "have deprived the first woman professor of more than her chair," by doubting her very existence.

But, Wolff having bodily introduced this error—for error it almost certainly is—it was promptly copied, as all errors were copied in these days, by an extended succession of indiscriminating copyists and publishers. None of them, apparently, noticed the obvious incongruity of copying Trotula's text under the name of an Eros who is not once mentioned in its pages. Clearly an Eros of the Augustan Age could have had nothing to do with a school at Salerno in the Middle Ages. How could Eros know and quote the Saracenic and mediaeval Latin writers from whom Trotula quotes freely? But, despite the absurdity of this error, it went on. In the great folio of Israel Spach published in Strasburg in 1597⁴, "Eros" again appears ("*Erotis Medici . . . quam aliqui Trotulam inepte nominant*"). And somewhat later the phrase is copied again by George Schenkins, who elaborates it into "*Erotis Medici et Juliae Augustae libertatum volunt, et Trotulae corrupto vulgo nomine inscribitur.*" Spach's large volume of more than a thousand pages contains articles by twenty-one writers on the diseases of women, the articles by Ambroise Paré, Felix Platerius, and Ruffus being illustrated. Trotula's article is evidently from one of her earlier manuscripts, and, as

¹ In the earliest manuscript (at Breslau) the pertinent text reads as follows: "*Quapropter ego, miseranda illarum calamitate (cioe delle donne), praesertim cujusdam matronae instigatione, compulsa* [Note the "*cocpula*," feminine gender, not "*compulsus*"] *incoepi diligentius contemplare de aegritudinibus quibus foemineus sexus saepissime molestatur.*" Another text has "*animum meum impulit*" . . . *ex libris Ypocratis, Galeni*, etc. In the Oxford copy someone has unadvisedly added the name of Constantine to her list of authors, but in the Leipzig text Cleopatra's name is given in place of that of Constantine.

As another bit of autobiography we have the famous sentence, "*Trotula vocata fuit quasi magistra operis . . . et admirata fuit quam plurimum.*" In the Oxford text *fui* appears instead of *fuit*. In the Leipzig text we have, "*invitata fuit quasi magistra . . . et admirata fuit,*" etc. It is to be noted that nowhere is the participle in the masculine gender, and that we also have *magistra* and *admirata* instead of their masculine equivalents

² "Essays on the History of Medicine," presented to Karl Sudhoff, 1924. Article on the "Origin of the Medical School at Salerno," by Charles and Dorothea Singer.

³ Osler, William, "*Bibliotheca Secunda.*" No. 3899.

⁴ Spach, Israel, "*Gynaeciorum, sive De Mulierum tum Communibus, tum gravidarum, parientum Libri*" . . . *Graecorum, Arabum, Latinorum, opera & studio, Israelis Spachii, Med. D., Profess. Argentinensis, 1597.*

usual, the prologue begins "*Cum auctor universitatis Deus*," etc. The chapters follow her usual order. The famous mention of herself as *Magistra*¹, in the third rather than the first person, is in chapter XX, on the treatment of *post partum* accidents. It is this chapter which caused many writers (cf. Spitzner) to argue that the book was not written by Trotula, but possibly by a student (docent), or someone else who chose to write a book for midwives, and name it for her.

This is not to say there never was an Eros. There was, a freedman of Julia, who lived in the time of Augustus. There was also an Erotian, who lived in the time of Nero. Eros wrote a book on gynecology. Erotian may have translated certain parts of Hippocrates, and compiled a lexicon for the use of students of Greek, which was much used before 1453, the date of the great influx of Greek refugees from Constantinople. It was not printed, however, until 1564, when it was retranslated by Bartolomaeus Eustachius from a copy in the library of Lorenzo de' Medici.² In 1567 Erotian's book was again translated by Herodianus Eustachius, and published in Strasburg. Here then are some further confusions of names: Eros and Erotian; Bartolomaeus (or Bartholinus) Eustachius and Herodianus Eustachius. Finally, these

¹ H. A. Kelly, in *Johns Hopkins Hospital Bulletin*, December, 1891, No. 18, says: "Israel Spachius's 'Gynecology' was printed at Strasburg in 1597. Spachius was born in 1550, studied medicine and was professor of Strasburg, and died in 1610. His great book contains nothing of his own, but he preserved many valuable books which are now exceedingly rare in the originals. It is of great importance to the student of history."

Trotula mentions no one whom Eros, or Erotian, could possibly have known, even by reputation, save only Hippocrates. In the prologue to the printed "*Erotis sive Trotulae . . . liber*" Galen is mentioned once, and twice in Chap. I, and Galen, of course, lived only after the alleged Eros was long dead. In Chap. II mention is made of the prescriptions of a doctor who lived in France. In Chap. III Galen is quoted twice. In Chap. V he is quoted again, and twice in Chap. VIII, and Paul of Aegina is also mentioned. Chap. X brings in both Galen and Hippocrates. Chap. XI refers to Galen, Priscian, and Paul. Chap. XIII quotes Galen on the position of the *foetus in utero*. Chap. XVII has "*dixit enim Copho*," who, as we know, was one of the early Salernitan writers, a teacher of anatomy. Chap. XX is the famous one in which, as a consultant, Trotula is summoned as the "*magistra operis*." Chap. LXI concerns prescriptions of the "*Mulieres Salernitanae*" and other women for offensive breath and sore eyes. Chap. LXII contains the Hermetic teachings regarding medicated baths to ward off old age, a very popular treatment of the "*Regimen Sanitatis*," and Chap. LXIII gives us the prescriptions of Master Gerald for the eyes—so much praised by Trotula. In fact, from the very first words of the prologue, "*Cum auctor universitatis Deus*," to its end, the *Erotis* could not possibly have been the work of any "Eros."

² Many of the manuscripts once at Canterbury were also bought by Lorenzo de' Medici, and are now in the Laurentian Library in Florence. Among them is Trotula's "*In utilitatem mulierum et pro decoratione earum, scilicet de facie et de vulva earum*."

names were still further complicated by Fabricius¹, who found an edition of Eros in the library of Hadrianus Junius in Nuremberg, and tells us that it was Bartolinus and Hadrianus Junius who started the theory that Trotula was a man named "Eros Juliae."

We probably now begin, however, to approach the solution of this problem. Having recently printed an edition of "*Eros Juliae*" on women's diseases, and perhaps a possible one of Erotian on the gynecological maxims of Hippocrates, and having a faded, or badly written, manuscript of Trotula in the old Beneventan script, and not being familiar with the name Trotula, Master Wolff's type-setter got a "T" and an "E" interchanged, and the "tu" into *sj*." Thus "Trot" became "Eros," "Trotula" became "Erosjula," and "Trosulae" became "Erosulae," or "Eros Juliae," which to the typesetter seemed correct, because it was a name which a book he had just been setting had made well known to him. This explanation may seem far-fetched; it does not fit all the facts; but it is ingenious, and even—to one familiar with mediaeval manuscripts and printing—fairly plausible.

Another hypothesis as to Trotula's identity is based on an extant manuscript which is signed "Trot," or annotated "trot'," "t^ot'," "tot'," contractions which certain followers of Sudhoff have translated as "Trottus." Hiersemann, a pupil of Sudhoff,² took this suggestion for his inaugural thesis; but he found no proof of the existence of any Salernitan named "Trottus," and no evidence that a man named Trottus had written on gynecology. What the abbreviations "Trot'," "trot'," "tt'," "t^ot'," and "t^o" mean, it is difficult to imagine.³ Of the seven authors of the "*De aegritud. curatione*," who are listed by name in the Breslau manuscript, "trot'" is the only one not called "Mag"; Henschel and De Renzi have more reason to translate the "Trot" of this manuscript as "Trotula" than Hiersemann has to translate it "Trottus"; but none of them may interpret the word correctly. It may stand for "*totius*" or "*tortius*"; it may be an outright cipher. But certainly

¹ Fabricius, Bibl. Gr. VI, 7. p. 700, Bodleian lib. (Hyde), Basel, 1566, and Bibl. Barberini; Zedler, 1586.

² Hiersemann, Conrad, "*Die Abschnitte aus der Practica des Trottus in der Salernitanischen Sammelnschrift de Aegritudinum Curatione. Breslau Codex Salern. 1160-1170*" [based on the seven authors of Salerno]. Inaugural Dissertation, Leipzig, 1921.

³ The text itself is full of abbreviations. In the "*Codex Salernitanus*," (Breslau, Stadtbibliothek, No. 1302) for example, "o" may stand for "*oculos*," "*oculis*," "*oculorum*"; "fr..o" may be "*frigido*," etc. Chapter X begins, "*Ad vomitum restringendum, accipe oleum et acetum et simul tot bullias.*"

"*Item ad vomitum reprimendum veteri bibe per quinque dies probatum est. (tot')*"

d *itu. trot'.*" The next chapter begins, "*de eodum trot.*"

"Trottus" as a solution is in no way proved. The only writers of that name in the catalogue of the Library of the British Museum are two churchmen of the fourteenth and sixteenth centuries, both of whom wrote on religious subjects.

Another author in Spach's collection was Hieronimus Mercurialis, (1530-1606), who devotes many pages to the treatment of sterility. He quotes freely from the old Greek, Roman, and Arab writers, but little from the Salernitans by name except Trotula. On p. 224, however, he quotes "*Trotula medicus, quem mulierem fuisse putant,*" etc., as praising a certain condiment made of beans to cure the depraved appetite of pregnant women. In *Liber Secundus* on abortion, p. 236, he quotes, not only from Pico della Mirandola, certain Arab writers, Pythagoras and Pliny, but also from Trotula. "*Est etiam aliud medicamentum propositum a Trotula, & confirmatum ab Avicen, ut mulier tempore partus Magnetem manibus teneat.*" But he does not accuse her of magic, or impute to her the "unethical methods" of the obstetrices and other "*medici,*" who profited by "opening the uterus in several ways."¹

Having followed Trotula through the sixteenth century, when she became Eros, we find no further controversy on the subject until the time of Mazza, who in 1681 came out in her defense.²

On the other hand, in the eighteenth century, Christian Godfred Gruner,³ in 1773, again denied her identity, chiefly, apparently, because he thought that no woman of the eleventh century could have written what was attributed to her. He realized, however, that the work attributed to her could not possibly have been written before the Christian era, so he also denied that it was written by Eros. His thesis is: "*Neque Eros, neque Trotula, sed Salernitanus quidam Medicus isque Christianus, Auctor Libelli est qui de Morbis mulierum inscribitur.*" Nor

¹ Hieronimus Mercurialis, "*De Morb. mulieb.*" Spach 1597. Hieronymus Mercurialis (1530-1606), of Forlì, was a professor of medicine at Padua, Bologna, and Pisa. He quotes all the old authorities, as well as Trotula "*medicus*"; and refers to her as the "old Tuenda." He speaks of the soft and supple hands of the obstetrix, which she said were important, and of the necessity for pregnant women to wander in a garden and have good things to eat—such, it is said, "*Trotulam Medicum antiquum cauisset.*"

² In these words: "*Eruditus enim multas habemus mulieres quae non nullis viris ad multa praestantiores, ipsaq; doctrina, vel vicerunt, vel aequarunt; nam ad medicam facultatem mulieres, sicut ad viros aptas scripsit Plato & Martialis cecinet. . . Fluorere igitur in Patrio Studio docendo, ac in Cathedris disceptande Abella, Mercuriadis, Rebecca, Trotta, quam alii Trotulam vocant, miris sane encomiis celebrandae ut notavit Tiraquellus, ac Sentia Guorna, ut ait Fortunatus Fidelis.*"—

Mazza, Antonio, "*Historiarum epitome de rebus Salernitanis.*" Naples, 1681.

³ Gruner, Christianus Godfredus, "*Neque Eros, neque Trotula,*" etc., Jena, 1773

did he think that the book was merely a compilation from many ancient writers by some otherwise unknown Erotian of the Middle Ages, as had also been suggested; for, he says, any man who could have written such a book would have been at least mentioned in the lists of great doctors compiled by Aëtius, or Copho, or Fabricius.¹ Of the defense of Trotula by De Renzi, her advocate in the nineteenth century, and the new attack on her by Sudhoff and his school, it is not necessary to speak further. Mention should be made, however, of a picture shown by De Renzi, (vol. III, p. 327) of a medal given to Trotula bearing the legend "*Salerni nata, florent ann. XI,*" encircling a jar of poppies, a key, and the staff and serpent of Aesculapius. On the reverse is the face of a gracious woman, and "*Trottola, medendi arte perita.*" He also gives us a picture (vol. II, p. 2) of an initial letter "T" from one of the Trotula manuscripts, showing the figure of a crowned teacher holding a scroll. She is seated on a stool as if in the act of lecturing. A serpent above her head makes the cross-bar of the "T."

Before turning to a further discussion of the content of Trotula's writings, a few more words might be said relative to the many variations in the form of her name. The simple fact is that such variations in form are not at all unusual in medieval manuscripts. Harless² quotes Baccius as follows: "*Trotola seu Trottola de Ruggiero, multae doctrinae matrona Salernitana, quae librum scripsit de morbis mulierum et earum cura,*" etc. Any book as popular and as frequently copied as hers was, would inevitably suffer from sheer carelessness, misquotation and poor translation. Harless himself has no doubt of the identity of Trotula, or of her connection with the Salerno school in the eleventh century.³

¹ For the theory that Trotula's writings were a mere compilation see Kestner, *Med. Lexic.*, p. 864; Hermann Conringus, "Introduc. in Art. Med.," p. 193; Thomas Bartholinus, "*Diss. De Libr. legend.*" VI, p. 132; Clericus, "*Hist. Med.*" v. III, p. 12; Stollus, "*Hist. Med.*" P. II, c. 1, p. 744.

² Harless, Dr. Christian Friedrich, "*Die Verdienste der Frauen,*" etc., 1830, quotes Fabricus, "*Bibl. Latin,*" T. III.

³ Ward, H. L. D., in his "Catalogue of the Romances in the British Museum," vol. I, p. 937, gives many examples of variation in form of name. For instance, relative to the "Titurél," a poem founded upon the "Parzival" and "Titurél" by Wolfram of Eschenbach, he says that, since Wolfram himself could neither read nor write, he told his story to a scribe, who took down the names as they sounded to him. In this way, the name Titurél becomes Ganatulander, Schranatulander, Schionatulander, and finally Tschionatulander. This manuscript belongs to the fifteenth century. In vol. I, p. 453, Ward calls attention to the misspelling of the name of the heroine of "King Horn's Ballad"; Ry-menild becomes Remenhild, Reymild, Rimyld, Reymyl, Reynild, Rigmenil, Rimignil, Riquiel, Rimel, Rienmelth, Raegnmaeld, Raegumaeld, and Irminhild. The same is true of Horn's own name and many others.

VI. THE DETAILS OF TROTULA'S PRACTICE

HAVING come to the reasonable conclusion that, whether baptized Trota, Trocta, or Trotula, a woman of such name did exist in the eleventh century, and was a learned woman doctor of Salerno, we are interested to know just what she taught. We know that she was the wife of a noted physician, and the mother of two or more sons, one of whom became a famous surgeon. We know that men as well as women were accustomed to go to her for medical advice. We know from her writings that in gynecology, and in what we now call obstetrics, she was far in advance of her times. It is even said that she performed Caesarian section to save the life of the baby if not of the mother, and her surgery of the perineum is classic. Constantine the African tells us of an interesting case-record of Trotula that has a modern ring. A certain man consulted her concerning his wife who was suffering from what had been diagnosed by another member of the faculty as vulval hernia, and therefore "*Trotula vocata fuit quasi magistra operis.*" On examination she diagnosed the case as one of vulval abscess. She lanced the abscess, dilated the opening with two fingers, directed the nurse to keep the wound open a short time for drainage, and later to heal it with medicated oils.

Trotula's writings fall into several categories. There was one article on the remedies for general diseases, "*De Compositione Medicamentorum,*" another on "*De Mulierum Passionibus,*" which has the following sub-headings, "*De modo generationis embrionis,*" "*De sterilitate ex parte viri,*" "*Ut mulier concipiat,*" "*De provocatione menstruorum,*" "*De fetu mortuo,*" "*Ad fistulas mammillae,*" etc. This article is part of the Salernitan compendium, "*De Aegritudinum curatione,*" in which Trotula is called "*Magistra operis.*" Many chapters of this work are lost, including (De Renzi thinks) the greater part of her own treatments of special subjects, though her description of a uterine polypus has been saved and is especially good.

Before considering Trotula's practical medical diagnoses and treatments we must take into account the pure theory which underlaid the physiology and pathology in the eleventh century. Old Bernard of Provins said: "Everything practical is theoretical, but the reverse is not true"; and the great popularity of the masters of Salerno was due to their emphasis on the practical. Trotula was preeminently a practical person. She could, and did, theorize. If the human body were perfect,

she says, its senses would be keener; it would have the power of smell like that of a vulture, the eye-sight of a lynx, the taste of an ape, the hearing of a wolf, and the touch of a spider. The working of the human machine was to her, as to Hippocrates and Galen, dependent on its humors, hot or cold, wet or dry.

She probably never dissected a human body, because it was against the law of the Church. Without a knowledge of pathology, all her diagnoses therefore had to depend on the symptoms of the patient. There were twenty-nine observations to be made on the urine, as many on the pulse, and several on the facial expression and the feel of the skin. Death was forecast by five signs. To the Salernitan sicknesses fell into three categories: those inherited, the contagious diseases, and "others."

Trotula had evidently cultivated the *tactus eruditus*, as well as her other senses, and had studied the pulse carefully. With these only, for instance, she distinguished the symptoms of malaria from those of typhoid and the eruptive fevers, calculating the height of the fever, and the date of convalescence, without any of the instruments of precision which seem to us so essential. She taught her pupils to be most observant of a patient. For instance, says Trotula, "When you reach the patient ask where his pain is, then feel his pulse, touch his skin to see if he has fever, ask if he has had a chill, and when the pain began, and if it was worse at night, watch his facial expression, test the softness of his abdomen, ask if he passes urine freely, look carefully at the urine, examine his body for sensitive spots, and if you find nothing ask what other doctors he has consulted and what was their diagnosis, ask if he ever had a similar attack, and when. Then, having found the cause of his trouble it will be easy to determine the treatment."¹ Trotula may have learned this from Galen or Hippocrates; but, if so, she adapted it to her own practical needs in teaching and in treatment, and, as a result, the schools at Salerno, and its hospitals, were in many ways far in advance of Galen.

If Trotula made use of mummery, or attributed mystical powers to her remedies, she neglected to mention it in her records. The dried moss from the skull of a man who had been hanged was not in her *materia medica*; nor was "tongue of newt or toe of frog" in her list of remedies. Some of the later of her manuscripts state that she advised the wearing of certain crystals, or the spongy bone from the head of an ass, to prevent abortion; but the very fact that these items appear in the later copies of her works and not her earlier, stamp them as the interpolations of copy-

¹ De Renzi, vol. V, pp. 300-304.

ists. The faculty of the school all believed in such herbs as cyclamen juice for hemorrhoids, poppy juice for pain, vapors of antimony for bronchitis, and aloes steeped in rose water for erysipelas of the face. Betony, collected on Ascension Day at the third hour, was mixed with white of egg to "comfort the stomach," or mixed with wax to cure melancholia, sciatica and paralysis. We can perhaps understand the psychic benefit a melancholy patient might derive from chewing a waxy gum; but that this treatment would be used in paralysis it is more difficult to believe. Dictamnus, snake-root, and cherry-laurel were all used for snake bite; and lettuce was said to ward off old age.

The "women of Salerno" were particularly interested in making their patients comfortable. They ordered medicated baths and suitable diets; had a fire kindled if the house seemed damp or cold; sprinkled the patient's face with sweet smelling extracts, applied oil of roses and violets to a foul ulcer; were careful not to allow patients to use their strength too fast in convalescence; advised them as to quiet games and occupations; and whenever possible gave a hopeful prognosis. Their final salutation was "*Vade in pace, Christo duce.*"

There were, of course, fixed rules for bleeding—these were of the greatest importance—and emphasis was placed on the destruction of flies, lice, and other insects at a time of general sickness. Also the Salernitan doctors were very kind to the poor. No pearls dissolved in wine were to be prescribed for those who could not afford them, nor the pills coated with gold which the rich demanded. "Simples" gathered in the fields and boiled with syrup, flavored differently, and often colored differently, for use in different diseases, were prescribed for the poor with faith and hope. Thus, even in Trotula's day, was psychology made the handmaiden of medicine.

Trotula was said to have written, to please her patients, a book on skin diseases; for the "skin one loves to touch" has always been the object of medical attention. Later compilers give her credit for the first description of the eruption and other outward manifestations of the disease we now call syphilis. Among her remedies for the complexion, pimples of the face, superfluous hairs, and skin cancer, we find an infusion of aloes in rose water, oil of bitter almonds with butter used as an ointment, orris root boiled in honey, and burdock leaves made into a poultice, etc. There was an often-copied lotion for sunburn "*quo utuntur mulieres Salernitanæ*," and oils for the scalp, "*sic operant mulieres Salernitanæ*," a treatment for sore mouth and bad teeth, and one for

erysipelas of the face, also hair dyes, such as are still used, black, yellow, and red. There were also even then coloring materials for the cheeks and lips, lotions to remove odors from the armpits, and gargles for sweetening the breath.¹

De Renzi gives to Trotula credit also for articles on epilepsy (for which she says "the oil of Jupiter's beard," meaning death itself, is alone efficacious), one on pleurisy, and others on stone in the kidneys and bladder, and on the diseases of dentition, but as they are unsigned there is no real proof that she wrote them.

Trotula's great work is, naturally, her book on gynecology. It matters very little whether her material came from Galen or Cleopatra or Soranus, for she gave it new life, adding much that was original from her own experience. We must not expect too much. As Von Siebold says, we need not be surprised that Trotula could not rise far above the general level of the medical knowledge of the eleventh century. What she did do was to teach and write so practical a treatise on gynecology and midwifery that for hundreds of years it was copied and used, and referred to as the great authority and textbook for women doctors and midwives in handling labor cases.

In Wolff's early printed edition of her work, Trotula begins, as we saw, by praising men and women above all created things, but regretting that women are the weaker. She finds them "colder" than men because, instead of perspiring to get rid of "humors," as a sort of purge they must menstruate at regular intervals for nearly forty years. If her menstruation is scanty, a woman becomes sick, she has no appetite, "eats earth," vomits, has headache, pains in the heart, dysentery, and may bleed at the nose or throat to relieve her "cold" blood. Trotula has many short chapters on this one subject of menstruation, following them with others, in no particular order, on sterility, pruritus ani and vulvae, signs of pregnancy, difficult parturition, infant feeding, choice of a nurse, cough, sweating, abortion, dysentery, stone, ulcers, pediculi, worms, swollen glands, cancer, fistulae, etc. We must never overlook

¹ Trotula says, "*Mulieres Salernitanae ponunt Viticellae, id est brioniae in melle, cum tali melle unguent faciem suam, et miro modo rubescit,*" but, she adds, other women mix with this preparation cucumbers and rose water. She gives a prescription for face paints, and says that Saracen women prefer green to other colors. To soften hands she uses asphodel mixed with white of egg. She tells her readers how to turn a blonde into a brunette, how to curl straight hair, how to make hair grow rapidly (by the use of mallows soaked in wine mixed with yolk of egg and herbs). She adds that "all our noble Salernitan men and women delight in the odor of musk in their hair."

the fact that this is the first complete compendium of its kind that has come down to us; and must realize that Trotula had no guide to follow other than fragments of Cleopatra and her contemporaries, and of Galen and Hippocrates and Aëtius and Paul of Aegina, of all of whose works she may have had more or less complete copies. In the edition of her writings quoted by Spach, 1597, there are nine short chapters on menstruation and the essential differences between men and women. In those days women frequently had the menopause at forty; and painful menstruation must have been even more common then than it was among the pampered women of the Victorian Age. Hot water bottles and hot fomentations to the abdomen, spicy inhalations, steaming the vulva, hot drinks, and attention to hygiene, baths and gymnastics—all were used by Trotula to relieve dysmenorrhea.

If the patient did not suffer pain from uterine disorders, she might nevertheless perhaps have prolapsus uteri or hemorrhoids. For these, respectively, Trotula advised the replacement of the prolapse and the use of tampons, or sponges, soaked in soothing and astringent lotions or ointments made with animal fat as a base. For pruritus she ordered salves of cherry-laurel and camphor made with white of egg, or lead ointment mixed with ground chick-peas and the blood of a goose, "as Galen advised and Hippocrates testified." At times she prescribed such astringents as oak galls mixed with the rinds of pomegranates, or sumac, or myrtle, or stupes of boxwood and oil heated over charcoal. For abscesses of the uterus she advised bleeding from the feet "twice a day if the woman is strong," otherwise plasters to the abdomen, besides hot drinks containing the powdered heart of a stag.

Sterility was something which most women of the Middle Ages feared worse than death. Trotula says that, if a woman has been sterile for thirty years, she is probably incurable; but that still it would be well to give her a particularly nourishing diet for a while to see if it might cure her. This is suggestive of Vitamin E, and so has a modern ring. Then comes a test experiment to determine which is sterile, the man or his wife. She puts their urine into separate flasks, and adds to each a certain quantity of convolvulus (our morning glory?). The specimen which, at the end of nine days, is "full of worms," or is decomposed, shows which person is at fault. If, however, both specimens become decomposed, there is still a possibility of cure by taking the testicular gland of a pig, drying and pulverizing it and making it into a tea for both man and wife to drink. The pregnant uterus of a wild sow may

be used, instead, as a remedy. It is not clear whether this was to be taken by both man and woman or not.¹

Occasionally it happens, says Trotula, that a woman fears to become pregnant because of a deformed pelvis. If this is the case let her take a certain stone, wrap it in skin, and wear it, together with a testicle of a pig and as many grains of barley as there are months during which she fears becoming pregnant. If she wishes to continue sterile, let her



A LYING-IN ROOM OF THE EARLY 10TH CENTURY
(From "*De Sorte Hominum.*" Venice, 1522.)

eat a handful of barley corns. If, however, pregnancy has occurred, Trotula gives a caution to the mother to avoid dysentery, anger, and unhappiness for fear of aborting. She then describes the formation of the ovum and the site of the fetus in utero during its nine months of gestation.

Her Chapter XIV, on the signs of pregnancy, gives us some insight into the superstitions of Trotula's period. She says, "if the left breast is

¹ Mandrake was always used as a cure for sterility and sometimes also, according to Bernard of Provins and Peter Hispanensis, the dried dung of an ass.

larger than the right the baby will be a girl" (this she got from Hippocrates). To determine sex she gives another sign: "Place a few drops of the mother's blood, or of the milk of her right breast, in a glass of water—if they sink the baby will be a boy." Constantine quoted this with approval; and even today we find such little experiments a conventional part of the obstetric superstitions of country people.

Trotula's next chapters concern the hygiene of pregnancy, rules for parturient women, difficult labor, and the procedures for midwives in all emergencies. Highly significant is the commentary, written in an eighteenth century style, in Latin, along the margins of these particular chapters of the copy of the Spach edition of Trotula which is in the Library of the British Museum. This anonymous annotator says, "I praise the nature of this woman; it is scarcely possible that it was written by a man. Many things are here recorded which indicate the endeavor of a woman to help her sex, and which must have been foreign to her natural modesty to write, but which are the honest business of a refined and gentle medical woman for the good of her sex." And again he writes, "*Auctor libri focmina*," and fully accepts her own self-revealing statement: "Wherefore I, Trotula, pitying the calamities of women and at the urgent request of certain ones, began to write this book on the diseases which affect their sex." It is interesting to find one of the owners of this old volume expressing himself in such terms of admiration, especially at a time when most men felt that women as a class could do very little work of a professional type.

Turning to Trotula's chapters on pediatrics, one of the earliest of all pediatric writings, her directions for the care of the new baby are to be admired. She says that the baby must be gently washed, and its cord carefully knotted and dried. The nurse must look at its tongue to see if it is "tied," and then examine its body to find if it is perfect in all its joints. She may give it a little sweet almond milk and sugar before its mother's breasts begin to secrete milk, or even chicken broth and camomile tea, etc. Then follow directions for the care of a baby through the teething age.

The nineteenth chapter deals with the selection of a nurse. Here again, although she copies Hippocrates and other and later writers on this subject, Trotula shows herself every inch a woman, and a mother, as well as a doctor. The nurse must have no sign of skin disease (syphilis?). She must not be pregnant; she must have good breasts and

a young baby of her own, be of good character, perfectly healthy, and have no cough.

Then follows a particularly valuable chapter (XX) on post-partum care,¹ beginning with the treatment of after-pains and retained placenta. In case of difficulty the midwife (!) was to send for Trotula at once, "*Unde communiter Trotula vocata fuit, quasi Magister operis.*" And in case Trotula thought some operation necessary, she took the patient to her own house, "*ut in secreto cognosceret causam aegritudinis,*" and "*Cum eam vidisset Trotula admirata fuit quam plurimum.*" Perhaps this last was inserted by a copyist; but, if not, it was a pardonable admission of her ability.

The following chapters of Trotula's book seem to have been collected from different sources, and to be arranged in no particular order: on the care of the breasts, on offensive sweating, on spots before the eyes, on the prolapse of a virgin uterus and the hindrances to copulation caused by such an accident as well as by a swollen vulva, on painful coitus, on abortion, on pains in the iliac region, on strangury, stone in the bladder, pediculosis vulvae (treated by an ointment of aloes), and on scabies, treated by an ointment of silver with an acid. For cancer she used dried bed bugs, mastic, tar, aloes, absinth, sage, etc. There are a few paragraphs on a baby's tight foreskin, others on the use of myrrh for bad breath, on the kind of astringents to use for a long uvula, on "worms in the hands and feet" (scabies?), on enlarged glands, fistulae, and on certain lotions to be used every day, "even Sundays."

Trotula used, of course, many of the old remedies of Dioscorides and Paul of Aegina. Artemisia, camphor, musk and barley gruel were relied upon in convalescence, camphor to dry the mother's milk, pulverized euphorbia for eruptive diseases of children, and many Arabic, and even more ancient, remedies now quite obsolete, and probably never of any specific value, for various other purposes. The best work, however, of Trotula and her colleagues, lay in their treatment for gynecological troubles and abnormalities in obstetrics. If according to the practices of their time they sometimes used a "savor of magic," as Thorndike suggests,² we might excuse them. They may have fed doves with acorns,

¹ Trotula used the Trendelenburg treatment for the post partum hemorrhage, "suspending" the patient by the legs for eight or nine days in bed, not allowing her to be bathed. She was to eat the simplest food, tampons were to be placed in the vagina if necessary, and an adherent placenta removed most thoroughly.

² Thorndike, Lynn, "A History of Magic and Experimental Science," vol. I, p. 740, 1923.

killed the doves and removed the acorns, and prescribed them for a pregnant woman to ease the pains of labor; they may have used the burned and pulverized horn of a stag in suppositories made with gum Arabic, almonds, and wheat flour as a cure for amenorrhea¹, as had been done by the women of the Augustan Age; they may have used artemisia with tampons of black bile for the same purpose. For post partum pains they may have made pastes of baked apples, without seeds or peel, mixed with mastic, wax, ivy leaves, and gladiolus flowers cooked in wine or vinegar, a mixture to be used for tampons in the vagina, or cataplasms to the abdomen, combined with hot drinks and carminatives in unlimited quantity. What of it? They may have made the patient feel better.

In gynecological surgery the school of Salerno was *facile princeps*. Many writers have praised Trotula's operation for a completely ruptured perineum. The uterus, if prolapsed, must, she directed, be softened by hot wine compresses and replaced, and the tear itself at once sutured. A tampon soaked in hot wine and butter was to be placed in the vagina, to retain the uterus, while deep stitches were to be taken at the anus, and in three or four other places, with silk thread, and the whole was to be well dusted with powder. Then a linen cloth soaked in tar water was to be tightly bandaged against the wound, and the patient's feet held "higher than her head." She was to be kept in this position for eight or nine days, without bathing. She was not to be allowed to cough or to vomit, and her diet was to be very simple. Knowing, of course, nothing of sepsis, Trotula yet directed that pads were to be placed against the anus, or in the rectum, to prevent any contact with faeces. But Trotula sensibly concludes, "although the perineum will be stronger than before it was torn, it would have been better to avoid such injury by greater care at the birth of the baby."²

Wounds of the abdomen were not rare in those hectic and troublesome times, and the women of Salerno knew all about "laudable pus." They, however, used hot wine, with great cleanliness, in closing wounds, and expected healing by first intention. They gave opiates for pain, and inhalations from a sponge soaked in opium and hysocyamus, hemlock, and mandrake, as a soporific. Sticher³ says that surgeons tied the saphenous vein, and removed abdominal tumors. Whether both women

¹ Piero Giacosa, *op. cit.*, p. 299.

² Gurlt, *op. cit.*, vol. I, p. 695.

³ Sticher, George, "Essays on the History of Medicine," Presented to Sudhoff 1924.

and men did this operation is not told; but we do know that men did very little surgery. Von Siebold,¹ well known German writer, does not for a moment doubt that obstetrics, at all events, which was entirely in the hands of the women of Salerno, was far in advance of general medicine in the eleventh century.

An illustration, copied by De Renzi from an old manuscript in Breslau, shows two women doctors officiating at the birth of Tancred.

Regimen sanitatis



Dis ist ein Regiment der gesuntheit durch
alle Wonade des gangen Jares/wie
man sich haltē sol mit essen vnd
auch mit trincken vñ sager
auch von aderlassen.

THE TITLE-PAGE OF ONE OF THE 240 EDITIONS OF THE
MOST POPULAR OF MEDIEVAL WORKS

the Norman, the father of Robert of Sicily. Elegantly clad in long green and yellow gowns with flowing sleeves, they stand by the bedside of the mother, holding the new baby high for her to admire. The blonde hair of the mother falls over a red pillow, and her body is covered with

¹ Von Siebold, Eduard Casper Jacob, "History of Obstetrics," 1839, p. 312.

a green damask coverlet. Nurses prepare a bath for the baby near a fire, and the room is evidently one of luxury. Other similar illustrations are to be found in manuscripts, as well as in sculpture and mosaics, dating from the twelfth and earlier centuries. On the walls of a chapel near Palermo are representations of the birth of Christ, showing the physicians in the same sort of elaborate costumes, the mother lying in a richly decorated room on a rather high bed, leaning on her elbow to watch the nurses bathe her very large and intelligent baby in a great goblet of water which an attendant fills from a silver pitcher. The father of the baby has modestly turned his back to the scene. Since of course there must be some indication of a manger in a Nativity picture, a cow and a donkey are introduced, who are looking on with wise eyes. Tancred was evidently born without these latter witnesses; but otherwise the scene is probably a faithful reproduction of one common in the eleventh and twelfth centuries.

The illustrations in Spach's book (published in 1597) are interesting, as indications of the anatomy and surgery of the time. There are cranioclasts, forceps shaped like fire tongs, and imaginary pictures of malformations of the uterus, and of a child in utero, as well as other conventional drawings of the female pelvic organs as they were supposed to be.

VII. POETICAL FORMS OF THE "REGIMEN SANITATIS SALERNITANUM"

WE need not be surprised that the contributions to medical literature made by the faculty of the Salernitan school were very early put into a sort of verse. Books were so scarce during its period that literature and science were often handed down orally. As poetry, or at least rhymed material, was easier to remember than prose, many books were written in that form. What a doctor had at the tip of his tongue was of more value to his patient than a book in some little known language, written in a cramped hand, and kept chained to a shelf in some library. Nor was it anything new to write even medical books in verse. Back in the time of Euclid, a scholar of Asia Minor named Aratos wrote 1154 verses covering what he knew of natural sciences; and during the reign of Caracalla, a treatise on therapeutics was written in verse by Serenus Samonicus in which were forty-two rhymed prescriptions. From the third or fourth centuries dates the "*De medicina*

praecepta saluberrima," which, in 1115 hexameters, contained remedies for every known ache or disease, not excepting warts and hemorrhoids. A friend of St. Augustine wrote a poem on embryology, physiology, etc., and Bishop Theobald (1022-1035), the Abbot of Monte Cassino, wrote as we have seen, a metrical bestiary.

Rhymsters, therefore, were not wanting to turn the famous "*Regimen Sanitatis Salernitanum*" into verse for general use. Who was the first to undertake it has been, however, the subject of much conjecture. Ackermann¹ thinks it was done by a son of Constantine the African, or by John of Mediolanum (Milan). Most of the other medical historians give to Arnold of Villanova (A. D. 1234-1311) the credit for first translating the "*Regimen*" into verse, especially the lines containing the rules for a healthy old age. Sudhoff suggests that Arnold borrowed his material from an even older manuscript, a pseudo-Aristotelian epistle dedicated to Alexander the Great, and Garrison hints that Arnold was only one of several writers who rhymed this material, Gilles de Corbeil being another. At any rate, as a text-book, this versified Salernitan "*Regimen*" was universally popular for hundreds of years. De Renzi found as many as 240 different editions of the poem in many languages, including one of 842 lines in Latin on gynecology, abortion, prolapsus uteri, sterility, the dead fetus, and the repair of the perineum, which, as we have seen, were exactly the subjects upon which Trotula herself wrote extensively.

The first edition of the poem, if we may speak of it as such, had 362 lines, to which Arnold himself later seems to have added 121 lines on hygiene, and 161 more as an appendix. His famous stanza ending, "*Haec tria: mens laeta sive hilaris, requies, moderata dieta*" has been often quoted or translated into other languages, one English translation being, "Use three physicians still, first Doctor Quiet, next Doctor Merryman, then Doctor Dyet," i.e., "eat moderately, rest sufficiently, be happy, and defy the doctor."

The Gilles de Corbeil, or Aegidius Corboliensis, mentioned was a Canon of Nôtre Dame of Paris, physician to Philip Augustus (1140-1224). Except that he had studied at Salerno in the twelfth century, very little is known about him. He is only mentioned twice by his contemporaries. He seems, however, to have written two medical poems based on the "*Regimen*," one on the pulse and the urine, the other on

¹ Ackermann, Johann Christian Gottlieb, "*Studii medici Salernitani Historia, Institutiones historiae medicinae*," 1792, p. 398.

antidotes, embodying the teachings of Nicolas, Platearius, and others, but omitting those of Trotula. Whoever was the author of the rhymed version of Trotula's writings, it is undeniable that it was used for hundreds of years by both men and women medical students.

The first rhymed edition of the "*Regimen Salernitanum*" to be printed in English¹ has a dedication to the king, which reads:

Salerno's school, in conclave high, unites
To counsel England's King, and thus indites:
If thou to health and vigor wouldst attain,
Shun weighty cares—all anger deem profane,
From heavy suppers and much wine abstain.

Arnold of Villanova's advice is here translated:

"Shouldst Doctors need,
Be these in Doctor's stead—
Rest, cheerfulness, and table thinly spread."

* * * * *

"Great suppers will the stomach's peace impair,
Wouldst lightly rest? Curtail thine evening fare."

According to this poem, Trotula's advice as to the care of the teeth is amplified into a belief that, as "dirt" in the blood causes disease by settling in certain parts of the body, so "worms" in the teeth cause pain.

"If in your teeth you hap to be tormented,
By meane some little wormes therein do breed,
Which pain (if heed be ta'en) may be prevented,
By keeping cleane your teeth, when as you feede;
Burne Francom-sence (a gum not evil sented),
Put hen-bane unto this, and Onyon-seed,
And with a Tunnell to the tooth that's hollow,
Convey the smoke thereof, and ease shall follow."

John Ordronaux, who was professor of medical jurisprudence at Columbia University, speaks thus of the women doctors of Salerno: "They were conservative, orthodox, most intelligent teachers, and most ethical, and they well fitted the spheres for which God had endowed them."

¹ Ordronaux, John, "Code of Health of the School of Salerno," translated into English verse, 1870.

Chapter IV

The Medical Women Of The Twelfth Century

I. THE LIFE OF THE 12TH CENTURY

AFTER finding a surprising amount of knowledge among the medical women of Salerno in the eleventh century it is disconcerting to learn that at its school in the twelfth century there were no women teachers so famous as Trotula, notwithstanding the fact that until the end of the century Salerno still had the only Christian coeducational medical school on the continent of Europe. Other colleges or universities were to be founded in this century by the men who had studied at Salerno,¹ but these were destined to put a long stop to coeducation except in Italy, and to drive to the monasteries most of the women who wished either to study the arts or medicine. Education *per se* at this time mattered little either to men or women; and medical education in particular was largely traditional and philosophical.

The twelfth century, as Eileen Power put it,² placed women either in a pit or on a pedestal. It was the century of the Crusades, in which women were either left at home poor, sick, or desolate, or praised to the skies for beauty or virtue by the troubadours. Their lot in general depended upon the men with whom they came in personal relationship. In their homes they were treated with ignominy if not abuse, and had little freedom of action. It must have been with a sense of relief that they entered a monastery where they were at least protected from unwelcome handling and had some opportunity for self-expression.

The twelfth century, like its predecessors, was one of perpetual turmoil if not of great wars. Church-made dogmas were taking the

¹ Salerno was sacked in 1194 by Henry VI. Its medical school never recovered its old prestige, for its best teachers were soon settled all over Europe.

² Power, Eileen, "Medieval English Nunneries," 1922.

place of the code of morals taught by Christ, and so-called Christian culture was destroying whatever did not suit its scheme. Neither the common people nor the well-to-do laymen knew much of life except as they went to war or became Crusaders, or travelled to faraway lands as merchants, for their leisure at home was spent in hunting, eating, and sleeping. To the men of the nobility in times of peace a beautiful suit of chain armor, handsome clothes, and wine, women, and lively amusements were all that they desired. To the servants of a household or hired soldiers, life must have been little short of purgatory. A quarrel over a boundary or a personal affront was a "casus belli," and therefore, as Saintsbury tells us¹, "the emperors and the admirals, perhaps even their fair and obliging daughters, had the covetous and ferocious, pious and lawless spirit which hardly dropped the sword except to take up the torch," that is to enter a convent or monastery.

A married woman had children as often as possible, brewed the ale, did a part of the spinning and some of the weaving, managed the servants, and probably with what traditional knowledge she had, attended to the various ailments of her community.

II. MEDICAL EDUCATION AND LAWS GOVERNING MEDICAL PRACTICE

THERE were no laws against the practice of medicine by women in the twelfth century, for, according to Roger's *Practica*, a surgical work written in this century, it was not until A.D. 1180 that the degree of M. D. was given to any one even at the Salerno school, and later still that laws were passed restricting the practice of medicine to licensed doctors. Any monk might call himself a *medicus* if he had copied a single medical manuscript. The Church, however, during this century, decreed once more that monks should not let blood or perform surgical operations. These decrees came from the Council of Tours in 1125, and from the Lateran in 1139, and, as a result, it was to women and laymen, especially barbers, fell the work of treating wounds, bleeding, and setting bones. There were no surgeons recognized as such before the thirteenth century, and although by the fourteenth there were laws making it a punishable offence for both barbers and women to practice surgery, such laws soon became dead letters. Surgeons, there-

¹ Saintsbury, George, "The Flourishing of Romance in the 12th and 13th Centuries," pp. 2, 37, 1897.

fore, whether male or female, were looked upon somewhat as menials, but at a time when everybody was supposed to be bled twice a year, and when broils were incessant they must have been none the less necessary.

Even so early as 1140 Roger II,¹ king of the "Two Sicilies," decreed that no one in his kingdom should practice medicine without a license obtained by passing an examination, whatever that may have meant in those days. Heavy penalties were imposed on those who broke this law, but discovery generally depended on the death of the patient. The old Visigothic Code was still appealed to for retribution, and this was in reality the Code of Hammurabi, more than two thousand years old, in which an eye for an eye, a tooth for a tooth was demanded from the physician. Death from abortifacients entailed the punishment not only of the administrator but of his or her family to the seventh generation. The attitude of the Church toward abortion being what it was this law was more generally observed.

Seventy years after the death of Roger II, Frederick II again enforced the medical laws with great severity, adding others defining the courses of medical study, and still other laws for the control of social morality. In A.D. 1224 a candidate was obliged to give evidence of having studied Hippocrates, Galen, and Avicenna for three years, after eight years of study of the Seven Liberal Arts.²

There were also laws governing prostitutes, but prostitution was so common that the laws were almost a dead letter, and the priests and physicians who personally dared to disregard laws of celibacy³ also shut their eyes to other laws. We remember that the Empress Theodora of Constantinople, wife of the Emperor Justinian, in the sixth century opened a house for the isolation of prostitutes where she attempted rescue work for them. Five hundred such women were brought in from the streets of the city and confined in the palace, and while a few of them attempted to commit suicide, many others were grateful for being relieved of an obnoxious life. In the later Middle Ages disorderly houses

¹ It will be recalled by travelers in Sicily that among the most beautiful treasures of Palermo is the ruined palace of this Roger with its Arabesque decorations on a Romanesque, partly ruined foundation. Its walls are covered with ancient glass mosaics on a gold ground. There is also a Norman house, and Roger's chapel of the twelfth century with superb mosaic pictures illustrating Bible stories. The tombs of Roger and his wife Constance are in the Cathedral.

² This consisted of the Trivium, grammar, rhetoric, dialectics; and the Quadrivium, arithmetic, geometry, astronomy, and musical annotation.

³ Celibacy of the clergy and physicians was instituted by the Council of Rheims in A.D. 1119, but there were then said to be seven women to one man, and prostitution was openly supported and sexual debauchery common.

were generally licensed, although sometimes let alone and sometimes "regulated." In 1161 in London a weekly medical examination was ordered for "sequestered women," and this examination was always made by medical women experts. In Avignon, while the popes were there in exile (1309-1377), it is said that the streets were free from lewd women, but up to the present time the problems of prostitution have never been settled properly by attention alone to women offenders, as Josephine Butler and others have shown.

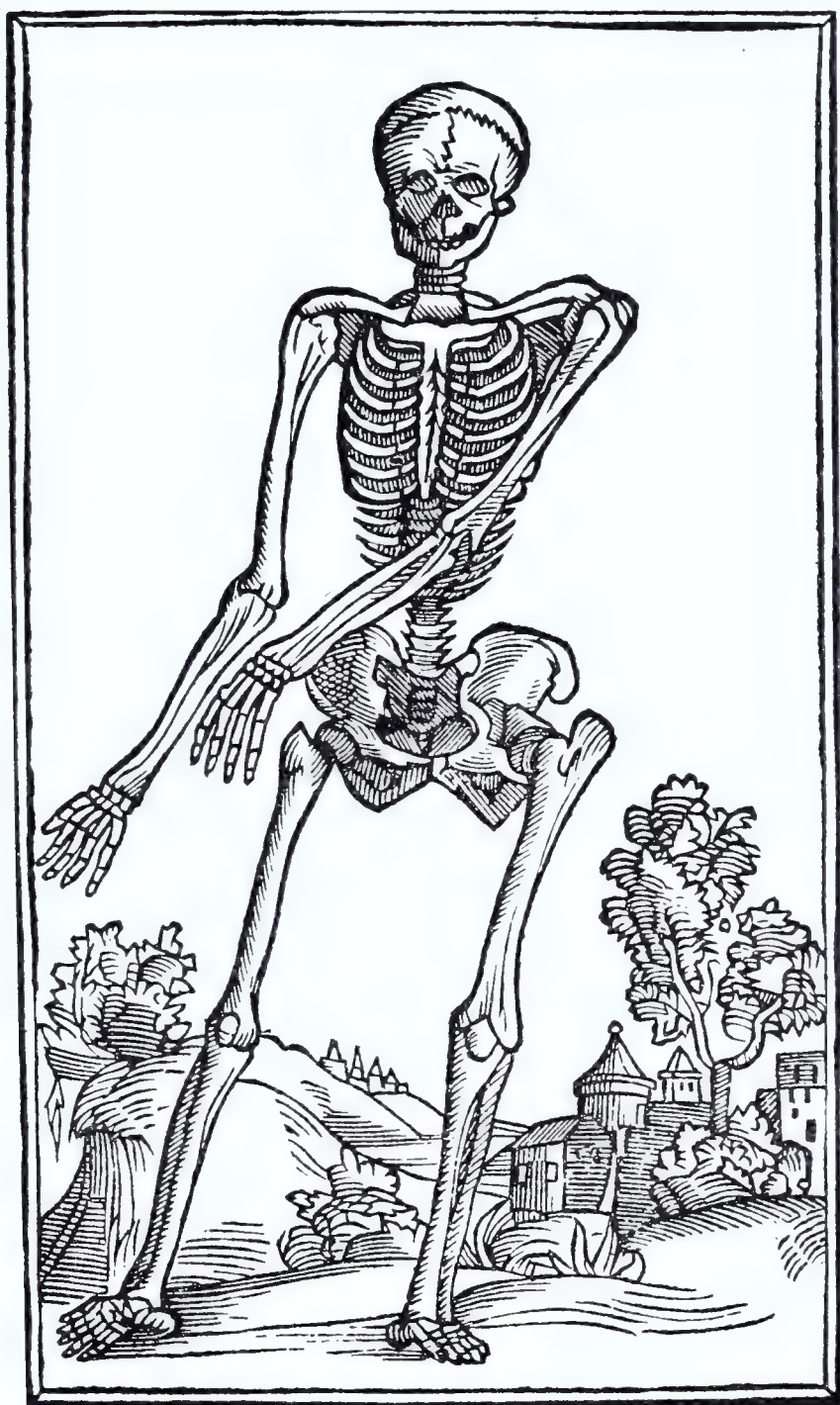
Frederick Barbarossa tried to enforce medical laws during his reign, but the only permanent result was to separate lay doctors, men and women, from lay surgeons, and to place the former on a distinctly higher plane than the latter, although a doctor's business was much less strenuous than that of a surgeon. Had there been laws against the practice of medicine and surgery by women it would have been impossible to enforce them. As an obstetrician she went about her business unhindered, studying wherever she found a teacher. Early in this century, however, women began to study privately at Montpellier, as "clients of physicians," Jews, Arabs, or Spaniards; and, according to Rashdall,¹ there was a Church medical school established in that city in 1182² which had no restrictions upon its admissions except the insistence that its pupils give free treatment to the clergy. In 1180 Lord Guillem allowed anyone to teach medicine in Montpellier, and probably women taught as well as men, for a hundred years later, in the time of Guy de Chauliac, one of the most popular teachers there was a woman.

No special buildings were needed for a medical school in the twelfth century, the tuition being entirely by lectures or a dissertation on the meaning of passages in Galen or Aristotle or the Salernitan authors. Pope Urban had decreed that the students should sit out of doors on the ground around their teacher rather than on benches in a

¹ Rashdall, H., "Universities of Europe in the Middle Ages," vol. II, p. 116, 1895.

² Garrison, 3rd ed., p. 166, "Introduction to the History of Medicine," says that the earliest universities of Europe were founded in the following order: Paris, 1110; Bologna, 1158; Oxford, 1167; Cambridge, 1209; five others in the following century. The medical faculty of Paris was not one of the earliest foundations of the university, and it was scarcely noticed before the end of the 12th century as a part of the Cathedral School of Notre Dame or of St. Geneviève. Its charter dates from the year 1200. The earliest statutes of Montpellier's medical school date from 1220. Teaching was in Arabic, Hebrew and Latin like that at Salerno.

Sarton, vol. II, p. 350-351, tells us that the word university implied a society or guild of masters. The word first appears in a charter of cardinal Robert of Courçon in 1215. The earliest form of academic degree was a promotion to *magister* or *licentia docendi*; both of these academic words have come down to us as master and doctor.



SKELETAL ANATOMY, 12TH CENTURY

room. This sort of *al fresco* school room may be seen in most tropical countries today, especially in the schools of the Mohammedan mosques, although even there the students are sheltered from storms and wet ground. If the ground were muddy, however, the students were told to lay their cloaks down and sit on them. Discussions and memorization of old authors took the place of investigations and experimentation, and scholars as well as teachers went from city to city in their search for knowledge, forever ruminating on Plato and Aristotle, astrology and astronomy, gaining some experience but doing little that was practical. One old writer of that time, Guido Bonatti, whom Dante saw in the *Inferno* "because of his diabolical arts," was accused of "expounding astrology as thoroughly as if he were teaching it to women." In fact, astronomy and astrology continued for three hundred years to be considered the most useful of all the sciences, for, says Stephen Hawes in the sixteenth century,¹ you will become well educated if you study astronomy.

Whatever their studies, universities were not as necessary to the common people of the twelfth century as hospitals. This was the century of the Crusades, when leprosy and every contagious disease followed the hordes of pilgrims. It is true that lepers were severely segregated by laws which were usually enforced. They were obliged to wear a hooded garment which completely covered them except for the eyes, and when they went begging they rang a bell or knocked clappers to give warning of their presence. Naturally, separate shelters or hostels were built hastily for them in every town where pious women or monks might gain a certain kind of fame and religious credit by devoting themselves to their care. Stories of such devotion were told by the wandering minstrels to appreciative audiences and suggested similar work to others.

III. THE HOME LIFE OF WOMEN, 12TH CENTURY

WE have merely touched the everyday life of women during the twelfth century and can scarcely imagine how dreary and uncomfortable their homes must have been even among the very wealthy, and how pitiable their condition when sick. The work of a few medical wom-

¹ Mead, Wm. E., "Stephen Hawes, Pastime of Pleasure," pp. 104, 105, 1928.
Who knew astronomy at every season
Might set in order everything by reason,

.....
For God himself is the chief astronomer.

(Lines 2687-2688, 2724)

en and nurses in the homes of the abject poor today is possibly suggestive of the work of all doctors in the Middle Ages, for then creature comforts were generally lacking everywhere. The ordinary house was scarcely more than a shelter of one story. The floors were the bare earth, there were no carpets, no glass windows, no chimneys. Most houses had but one room, and the smoke from a fire in the center of it found exit through a hole in the roof or beneath the eaves. Even in the time of Chaucer¹ English cottages were no better than those of the twelfth century. Travelers were obliged to sleep on and under straw, perhaps in a loft with other members of the family or their friends, and share the rest of the house with pigs and hens and the donkey. In the living room, near the fire, was a movable trestle table in the center of which a bowl of food might be placed into which everybody dipped his bread, and one large cup from which everybody drank. The bedding along the walls, and also the covering of the floor, was of straw or rushes, more or less filthy and full of remnants of food and rubbish. Patients, as well as healthy people, slept in their clothes or naked, as is seen in old illustrations in the manuscripts, and the hospitals provided so few beds that the dying and the living had to lie elbow to elbow, each a human stove so long as his heart continued to beat, or an apparently unfeeling machine. In such homes and under such conditions physicians and nurses, midwives and priests did their work as best they could, but it is small wonder if mortality was high.

As the question of an education for the poor was not even considered, what they learned of medicine they learned through their eyes or ears. Bible pictures in mosaic on the walls of churches and castles told their stories clearly; and the methods of caring for the sick were handed down from one generation to the next by word of mouth along with the traditions for gathering herbs and mixing poultices.

The women of the upper classes were as a rule better educated than their brothers, but though they had the power of making their own wills and using their dowries as they chose, they were in no respect free or independent in their homes. Mills² tells us that the women of the time of the Crusades were virtually slaves of their fathers or husbands. Heiresses must marry according to their father's will or forfeit their dowry. A widow inherited half of her husband's property and was the

¹ Quoting from the *Nonnes Preestes Tale*: "The poure wydwe (widow) somdel stape in age" was so stiff that she could no longer dance. Her cottage was black with soot, and over-eating had never made her sick for her diet was milk and brown bread, and occasionally an egg.

² Mills, Charles, "History of the Crusades," vol. I, 1828.

guardian of her babes; she might marry again, but a maiden of fifty even with a small dowry was considered unmarriageable, i. e. of no value in the market, and a poor girl might actually be sold for one hundred pieces of gold like a female falcon. Marie de France has given us many interesting pictures of the private or home life of the wealthy women of this period particularly when their husbands were off at war or taking part in a Crusade. Being educated for the care of the estate they were bold and fearless and strong. Prudery being unknown they lived in common with guests and friends in the great hall. If the mistress were a good Christian, she considered nothing menial which she could do for any guests who might be ill or injured.¹

Marie de France² lived in Normandy and "flourished" between 1175 and 1190. She tells us, "*Marie ai num, si suis de France,*" but she was not from Paris, although her dialect is more like the French of the *Isle* than of her own country. She lived and wrote, however, at the court of Henry II, and she may have been one of the *trouvères* who wrote stories for a living. She must either have traveled throughout the various provinces or else met wandering minstrels who sang for her. Her stories were derived mainly from Brittany, England, and Ireland, but at least a dozen of her *lais* came directly from the Breton people, and into them she wove many a bit of medical lore. Some of these *lais* were even adapted from tales of the Far East, or from Greece, and she sang them to the tunes she played on her harp. In one of her tales, *The Two Lovers*,³ there is a royal maiden living not far from Rouen in Normandy, whose father would only give her in marriage to the man who could carry her to the top of a certain hill without stopping. The girl makes herself too heavy for those whom she does not wish to marry, but for the one of her choice she diets according to the rules of the *Regimen of Salerno*, and sends him to the "ladies of Salerno" or to her own aunt, who was a medical woman, for some medicine which should make him strong enough for his task. He returns with the drug but scorns to take it when he sees how thin the girl is; he picks her up and rushes with her to the top of the hill, but, alas, drops dead when they arrive at the end of the path. Marie's *lais* made a great impression upon the Court ladies and knights of the days of Henry I and Henry II, for they believed with her that there were certain drugs so wonderful that

¹ Fontages, Haryett, "*Les Femmes docteurs en médecine dans tous les pays,*" 1901.

² See article in *Encyclopædia Britannica*, XIV edition, Vol. 14, p. 884.

³ Marie de France, "*Le Lai des Deux Amants.*"



TREATMENT OF WOUNDS OF THE HEAD—12TH CENTURY.

(The six lower panels show operations—perhaps trephining—in two, bandaging in two, scarifications in two. From a French Ms. of about 1180, of a medical treatise by Roger of Salerno. Courtesy of Charles and Dorothea Singer)

the mere smell of them would bring the dead to life, and medicines known only to animals like the weasel for instance, which alone could find the red vervain or a certain little yellow flower to cure snake bite, and they also imagined that snakes, like those of Mt. Ida in Crete, still existed and were as important, medically, as in olden times, but they were proverbially difficult to find.

The homes of the rich, as already noted, were scarcely more comfortable, or even cleaner, than those of the poor. They were built for defense; many of them were great castles; but, as in the humbler cottages, they had no window glass and no chimneys; their floors were of stone or bricks covered with straw or rushes into which was thrown the waste from the table which accumulated until the stench was unendurable. Except that the master and mistress had a room apart, household and guests as a rule slept together in the great hall after the evening meal. The life of such a high high-born wife has often been told.¹ Her daily routine was somewhat as follows: She arose early in the morning when the watchman in the tower sounded his horn, and, stepping from her high curtained bed onto a fur rug before a blazing fire on the hearth, she dressed quickly and washed her face in perfumed water, said her prayers, and ate a bowl of soup. She then started on her rounds of the estate to visit the sick or injured, and to arrange the day's work for the servants. That she could set a broken limb² is shown by the descriptions in Roger's "Surgery." She might, accompanied by her lute, sing a nervous person to sleep or tell a story to the sick or wounded knight, or pet a fretful baby and prescribe its food or remedies.

When her domestic and medical work was finished, she might go hawking with another knight, or play a game of chess, or sit in the great hall to weave or embroider an altar cloth while listening to the latest songs of a wandering minstrel. Her clothes were of imported silk or linen or of fine damask, bordered with fur, and her hair was

¹ Welch, Alice Kemp, *Six Mediaeval Women*, Introduction, 1913.

² Schultz, Alwin, "*Das Höfische Leben zur Zeit Der Minnesinger*," vol. I, p. 202, 1889.

"*Die alte Königin wäscht nun seine Wunden mit 'dictam und warmen win und einen bläwen zindal, verbindet sie dann und steckt ihm eine Schlafwurz in den Mund.'*" Schultz adds that women were the best nurses and probably the best doctors.

Die Frauen aber verstehen nicht bloss die Wunden zu verbinden, sie sammeln auch im Walde heilgräftigen Kräter und stellen die Salben und Pflaster selbst her." Schultz, vol. I, p. 201.

Aegidius Corboliensis, Gilles of Corbeil, said that women were especially skilled in the treatment of diseases of children. (Schultz, vol. I, p. 203.)

held by beautiful ivory combs brought from the Far East.¹ Her life was varied and more or less interesting, but it is doubtful that all wives were as exemplary as the one described. The people of the Middle Ages lived in a rather savage world, full of selfishness and immorality. The women of southern France in particular seem to have been an amorous lot, and most of them got their chief pleasure from illicit love. Queen Eleanor declared that true love does not exist between married people.

Husbands were allowed to beat their wives, or to punish them in any other way, for laxity of conduct—if discovered or even suspected. The Sieur de Coucy, like the Normans of earlier times, compelled his wife to eat the still warm heart of her dead lover, although he was indulgent to her in many ways, taught her how to keep accounts, and to prepare and use medicines, and to manage his large estates. Kings like Frederick Barbarossa and Richard the Lion-Hearted ordered culprits to be horribly maimed in the presence not only of the men but of the ladies of the court as an example to evil doers. In the *Lamentations of Mathieu*² we are told that women are in general much worse sinners than men, in fact they are the very incarnations of evil, sensual, lacking in moral courage, and to Mathieu's thinking it would have been better to have created an Eve-less world.

On the other hand, it is possible to find many noble women of the period who were by no means addicted to love affairs. The Countess of Hereford devoted her life as a "fisicienne" to the care of the sick without any other pay than "the hope of escaping the immortal worm who devours the damned." Women of royal birth went about in rags and filth for humility's sake; others wore rough garments beneath their velvet robes to mortify their flesh, and there were many high-born dames, like Euphemia of Wherwell, who gave up lives of comparative comfort to become prioresses of monasteries. It is said that she "with

¹ We find in the "Erec and Enide" of Chrétien de Troyes that after Erec was healed he was dressed in a robe of dark purple silk trimmed with ermine, and his host gave him also a striped cloak trimmed with fur. He and Enide left the castle on good-tempered palfreys, their breast-straps trimmed with gold and emeralds. Precious purple velvet was laid over the saddles, the bows of which were of ivory carved to represent the arrival of Aeneas at Troy. The castle was decorated with paintings and its walls were hung with silken draperies. They ate birds, venison, fruit and wines for supper. The garden contained all sorts of fruit and flowers and every kind of spice used in medicine. This all sounds comfortable and luxurious, but it may have been due to the imagination of the author, and may not have been a true picture of his own life at court.

² Langlois, Ch., "*La Vie en France au Moyen Age*," p. 147, 1926.

the spirit of a man rather than of a woman dedicated herself to a life of medicine and piety."

Nor can we lay all the blame for the low state of medical practice in this period upon the Church, although it had effectually put a stop to scientific experimentation, and had forbidden dissections. The laws of retribution—an eye for an eye, a tooth for a tooth—already mentioned, prevented even the best physicians of the time from using surgical measures quickly. This to us unpardonable delay in treatment is shown in the case of Count Leopold of Austria who, in 1194, fell from his horse and suffered a compound fracture of the leg. His court physician dared not attempt to set the leg or to amputate it, although by the third day "the bone pierced the skin a hand's span, and the leg was black." Then the Count, in agony and fear, commanded a servant to pound three times with a hammer on a chisel which he himself held against the injured leg and so amputated the foot. It was too late by then to save his life; but the doctor was not blamed for his death, as he would have been had he died after an operation.

IV. THE CRUSADERS AND THEIR HOSPITALS

HOME life in this century was broken by three Crusades with their deadly aftermath, but the crusading movement was not an entirely new thing in Europe when it was invigorated by the preaching of Peter the Hermit. In the earlier Middle Ages the Church permitted certain crimes to be expiated by gifts to it. Those who had no money or goods with which to pay for absolution might make amends by a pilgrimage to the Holy Shrines at Jerusalem or to a famous cathedral like that of Santiago at Compostella in northern Spain. From the earliest Christian times people who could afford the long journey had been fired with pious zeal to go to Jerusalem as a penance or to fulfill a vow. Even a cask of Jordan water, or a sack of earth from the Mount of Olives had a large value in trade. Also Persian cloth or Damascus steel or jewels or embroideries were eagerly bought in the markets at home; and the merchants who went for gain and the pilgrims who went for penance both brought home manuscripts of famous books, translations of ancient authors, and wondrous tales of the animals, stones, and plants in far-away countries.

There was a burning desire in the hearts of belligerent Christians to drive the hated Mohammedans out of Palestine. The women were as fierce as the men. So, when the war cry of Peter the Hermit, *Deus*

il vult resounded over Europe, men and women answered the call by the thousands, for, although the priests tried to dissuade women from leaving their homes, they rushed with babes in their arms to win the absolution promised by Pope Urban to all who followed the Crusaders' banner. Only a small remnant of this army lived even to reach Constantinople.¹

The second Crusade was better organized than the first. It was started in 1145 by Bernard of Clairvaux, who died eight years later. Funds for the journey had been raised by Pope Eugenius, a friend of Hildegard and Bernard, by the sale of indulgences. The Crusaders this time came mostly from the regions around the Rhine. The Pope, Saint Bernard, and Henry, Archbishop of Mainz, met at Trier to plan the route; and when Hildegard's "*Scivias*" (Know Thy Ways) was read to them, they felt that it was a message from the Lord urging them to begin the Crusade at once. She herself was so impressed with the prophetic mission of Saint Bernard that she called him "the eagle that looks at the sun." He was nominally the head of this Crusade, although the army was led by Robert of Normandy.

This army, like the first, consisted of all sorts and conditions of men, women and children. Women, whenever possible, rode on horseback with their families, sometimes several on one poor animal. They wore long skirts and their finest garments and rode astride; in some cases they carried spears and shields like certain of the men. The leader of the women was called "the golden-footed dame," and, according to unauthenticated stories, she was none other than Eleanor of Aquitaine, the queen of Louis VII of France, a handsome and learned but somewhat ungodly woman whose gallantries so shocked her husband as to give him cause to divorce her after they returned from Jerusalem. She was, however, brave and fearless, a fine scholar whose medical studies, as we have seen, gave her the impetus to establish hospitals for the sick and wounded wherever she lived, and to care for the patients personally. It was said to be she who prompted the following lines from Spenser's *Faery Queene* (III, 4, 1), written long after her day.

Where be the battailles, where the shield and speare,
And all the conquests which them high did reare,

.

Been they all dead, and laid in doleful herse?

These followers of Saint Bernard stopped at Salerno for ships in which to make the journey to Constantinople, and there the medical

¹ It has been said that eight hundred thousand people were killed or died in the first Crusade, of whom only seventy thousand were Saracens. Great numbers of Jews were also tortured and murdered by the Crusaders.



THE ANCIENT DRESS OF THE NURSING NUNS OF ST. JOHN OF
JERUSALEM.

(From Nutting and Dock's "A History of Nursing.")

women of the army came in contact with the famous medical women of the great medical school, to their undoubted advantage. We find the name of Hersende of Champagne among the travelers, with the title of *maitresse fisicienne*, one more proof that the women of the period took high rank in medical affairs. Hersende had charge of the lewd women and all the camp hangers-on who usually follow armies and play havoc with the health and morals of the soldiers. We can not but wonder if she was not a relative of the famous Hersende, abbess of Fontevrault, who taught medicine to her followers and attended the patients in the hospitals of the abbey, where, eventually, Queen Eleanor and her second husband and her son Richard the Lion Hearted, were buried.

Of the thousands of Crusaders who left Germany in the second Crusade only about fifty thousand lived to reach Jerusalem, and, of these, but a pitiful handful ever returned to their homes. Doctors and surgeons, none of whom we know by name, must have been few by the time the army reached Constantinople, for we know that Conrad III, the emperor of Germany, one of the Crusaders, could get no medical attention until he reached Athens and the Greek physicians.

In the third Crusade, in which we find Frederick Barbarossa, Richard the Lion Hearted, and Philip Augustus II of France, there seem to have been even fewer physicians and surgeons than in its predecessors. For, when the demoralized army reached Jerusalem, almost at the last extremity, it is said that physicians were sent to them by Saladin himself, their noble enemy.

Unfortunately, the possession of holy relics and the prayers of the monks were not successful in staying epidemics or in healing wounds; and the need of hospital facilities for the Crusaders was, from the very first, so obvious that a *maitress fisicienne* like Hersende, and nurses like Edina Rittle and Agnes of the Knights of St. John were busy night and day in hastily improvised infirmaries in Jerusalem.

Those Crusaders who reached Constantinople maimed or diseased received the best of care in its great asylums under the care of men and women doctors, including Queen Irene and her daughter Anna Comnena.

Alexis Comnenos in 1081 had built a hospital of ten thousand beds in Constantinople where his brilliant daughter Anna¹ was physician in chief. Anna had studied medicine at her father's court, and had become so proficient that she attended her father in his last illness, and presided at the consultations of his physicians. She wrote a book on

¹ Sarton, *op. cit.*, vol. II, p. 137.

gout, a very common disease in those days of rich food and sweet wines. Sarton says that she was reputed to be able to "discuss the subject intelligently" with the doctors, and that her history of her father's reign is one of the most interesting books of the century. Alexis Comnenos died in 1118. When the hordes of pilgrims under Godfrey of Bouillon arrived in Constantinople Anna kept memoranda of their life, described their appearance and daily actions, and tended the sick in the hospital. Sarton calls her one of the four great medical writers of the twelfth century, the others being Hildegard, a German, Moses Maimonides, a Jew, and Averroes, an Arab.

Anna Comnena's sister-in-law, Bertha, in 1126, when she became queen, built another still larger hospital than that of Alexis, in order to have room for the sick or wounded pilgrims from the west. This was the famous Pantocrator, or general hospital. Each of its five divisions was under a medical woman, who further subdivided the work so that trained midwives cared for women in labor, nurses of both sexes did the ward work, and six surgeons, besides barbers and laymen, had charge of the accident and military cases. It is said that there were also consulting physicians visiting the patients once a week. Happily, we know the name of one woman who was for a time at the head of this great institution; Edina Rittle, of Essex County, England. Whether she had been a Crusader, or how otherwise she happened to come to Constantinople, we do not know.

Hallam¹ tells us that the first hospitals actually built for the crusading pilgrims were erected in Jerusalem by rich merchants from Amalfi and Salerno; but that soon there was so much sickness in the towns through which the Crusaders passed that hospitals were needed all along their routes to the Holy Land. Godfrey of Bouillon, of the first Crusade, who conquered Jerusalem in 1099, found its hospitals over-crowded, but that the patients were being well cared for by a woman "*fisicienne*" named Agnes, a member of the Knights of St. John of Jerusalem, an order which had just been founded to care for sick Crusaders in Jerusalem.² There are several medical women named Agnes among the monastic women of the twelfth century, so that it has been impossible to

¹ Hallam, Henry, "The History of the Middle Ages," vol. I, p. 54.

² This order was moved to Acre after the capture of Jerusalem by Saladin in 1187, then to Cyprus in 1291, to Rhodes in 1310, and to Malta in 1530. During the Great War of 1914-18 women doctors from England were sent to this old hospital in Malta to care for the sick and wounded soldiers. See also Charles Mills, "History of the Crusades," vol. I, 1828, p. 138. Also Mélanie Lipinska, "*Histoire des femmes médecins*," 1900, p. 262.

identify this particular one. Members of the Knights of St. John wore a black gown with a large white cross on the shoulder.¹ We are told² that, during the Crusades, there was not a potentate in Christendom who had not some Hospitalers in his Council. We are told of a Sister Ubaldina of Pisa who was "mother of the poor, the restorer of the sick, the comforter of the stricken-hearted; there was no kind of misery for which she had not a remedy or consolation";³ while the king of Hungary said of their work: "Lodging in their houses I have seen them every day . . . lay the sick in good beds and treat them with great care." We are told, of the hospital of St. Gall in Switzerland, that those in charge were gentle and sympathetic with the sufferers, no matter how dirty or how much infested with vermin; and that they went from patient to patient with hot plates for cold feet, cooling lotions for the feverish heads, and soothing drinks for those in pain. In a way they were like the trained nurses of today except that no physician dictated to them what to do for their patients.

Although conditions in many of the hospitals of the period were deplorable, all historians testify to the kindness and sympathy of the Hospitallers with the sick and hungry and ragged of the hospitals of the Order. Some years after the time of Agnes and her work in Jerusalem we find that men appear to be the only physicians and supervisors. A knight was Infirmarian. He visited the patients every day. Two other knights attended to the food, provided nursing, bandages, clothing, and gave the patients baths and anointed them if necessary. A paid physician was at the hospital every day. Whether there were medical schools connected with any of these hospitals we are not told.

Archbishop Lanfranc and the monk Rahere had established quasi private hospitals where the sick were well treated and their care-takers (nurses) decently housed and fed, but, on the other hand, in Paris the cathedral hospital of *Notre Dame*, maintained by the Church as the *Hotel Dieu*, was anything but comfortable either for patients or attendants, and the Augustinian Sisters were veritable slaves. They had no liberty, no comforts, no education, and they were vowed to obedience,

¹ Another Crusaders' Order, the Knights Templars, had its beginning in Burgundy in 1119 to protect pilgrims on their way to the Holy Land. Their gowns bore a red cross. They were soon to become the greatest financiers among the Christians. The Order was dissolved in A.D. 1312 by Clement V, only to be re-formed; but Sarton says (vol. II, p. 161) that their subsequent trials paved the way for the witch trials and inquisitions of the following centuries.

² Nutting and Dock, "History of Nursing," 1907, pp. 186 ff.

³ Quoted from Sutherland, "Knights of Malta," p. 105.

poverty, and humility. Their only satisfaction was in their belief that the harder they worked the more credit they would have in Heaven. Patients were crowded into the beds four or six in each, regardless of disease, the living with the dying. Their laundry was washed by the nuns in the cold water of the Seine that flowed past the hospital walls. The doctors, moreover, were men with scanty education and less sympathy either for patients or nurses, and since the diagnosis of disease depended merely upon the appearance of the patient or of his urine or the rapidity of his pulse, treatment was not complicated, so that a medical visit need not have been long. There was nothing of experimental medicine allowed at that time, for the Church continued to uphold the traditions of Galen. Logic and hair-splitting controversies governed all religious teaching, and nobody was bold enough to deny the assertions of the astrologers as to the will of the Almighty or the wiles of the Evil One, and since the leaders of the Crusades were urging the Christians to torture and annihilate Jews and Saracens and heretics wherever they could be found, human life was cheap indeed. As a matter of course, therefore, mountebanks and tricksters flourished among the gullible crowds. They extracted teeth, set bones, treated sore eyes, and removed cataracts in the market places, and must have done inestimable harm among the Crusaders as well as among the people through whose towns they went.

Miss Nutting says that in only one instance is a woman mentioned as living outside the hospital. She had charge of anointing the cases of scurvy;¹ and is described as "elderly and experienced." The "anointing" mentioned was, we are told, with mercury. Whether this was a treatment for syphilis or actual scurvy we are not certain.

V. THE JEWISH AND ARABIC MEDICAL WOMEN OF THE 12TH CENTURY

FROM our point of view it is to be regretted that the Arabs and the Jews of the southern Europe of the Middle Ages incurred the enmity of the Church, and suffered its persecutions, for whatever progress was made in art and architecture and science after the Arabs settled in Spain and crept into southern Italy, was mainly due to them and the Jews. These incomers from Persia, Egypt, Syria, and North Africa,

¹ Nutting and Dock, vol. I, p. 200.

under the rule of the Lombards as well as under their own rulers, lived fairly peaceably in Spain for four hundred years.

In A.D. 941 the Arabs had introduced their numerals into Europe, and by the twelfth century they had become famous as copyists and translators of manuscripts in many languages. While the rest of Europe was half barbarian they were establishing public libraries, colleges and hospitals on a magnificent scale. Yet it can not be said that they were



OBSTETRICS IN THE 12TH CENTURY
(*Note the woman doctor and nurse.*)

original investigators, or great artists. They were borrowers in medicine as well as in art. But Thorndike remarks¹ that, even though in medicine they made few original observations, their preservation of the works of Galen and Aristotle, which hitherto "were little more than respectable traditions," gives them claim to our thanks.

¹ Thorndike, Lynn, "Magic and Experimental Science," vol. II, p. 204.

It is a pity that, of all the books written in the Middle Ages, comparatively few remain. The early Christians had burned the libraries of the Greeks at Alexandria. The Arabs destroyed Christian books in their religious zeal (although they later made large amends for this vandalism by searching out manuscripts in private libraries and translating them into Arabic or Hebrew). Then the Church began to discover heresies in every newly written page, and sought to destroy the book and torture its writer to death. In these ways we may have lost many a manuscript written by nameless women doctors.

Among the Muslim doctors we know of only two by name. They were the daughter and granddaughter of Avenzoar, or Ibn Zuhr, who belonged to the greatest medical family of Mohammedan Spain in the first part of the twelfth century, and perhaps we may even say he was the most distinguished physician in Europe.¹ Avenzoar himself was born in Seville in 1091 or 1094; was a follower of Galen rather than of the Arabic traditions; was physician to the Sultan, and a writer of medical books on every subject except gynecology. He died in 1162, leaving sons and daughters to carry on his work; in fact there were seven generations of medical men and women in this one Mohammedan family. It is said that one son of Avenzoar, and one granddaughter, a midwife, were killed by poison—possibly in retribution for the death of some patient. The works of Avenzoar were copied and translated into Hebrew and Latin and used for five hundred years and were among the first of the Venetian incunabula.²

If further proof were needed that there were medical women among the Arabs, we find the statement of Albucasis in his *De Chirurgia*, that, if a woman suffers from calculus, she must have an able *woman* surgeon attend her ("*mulierem medicam praestantem*") ; and that, if this is not possible owing to their being too few specially trained in such surgery, then a "moral man doctor accompanied by a *mulier obstetrix*."³ Avicenna also cited one woman doctor who was an eye surgeon; and Nicaise says that Arab women continued for many years to practice medicine and teach not only in Salerno but in many cities of Italy.

If we may judge from the pomp and dignity of the Muslim physicians in Morocco today, we need not wonder that they were highly impressive to their contemporaries in the twelfth century.⁴ Their

¹ Sarton, vol. II, p. 231, ff.

² Singer, Charles, "From Magic to Science," p. 80, 1928.

³ Nicaise, E., "*La Grande Chirurgie de Guy de Chauliac*," p. LXIII, LXIV, 1890.

⁴ Leclerc, Lucien, "*Histoire de la médecine Arabe*," 2 vols., 1876.

voluminous turbans, silken robes, and damask coats with flowing sleeves were greatly admired, and their dignified bearing and air of deep contemplation must have inspired their patients with confidence in their abilities.

Mohammedan women doctors, on the other hand, with faces veiled, can have inspired no such admiration, but the Jewish women were under no restrictions as to their costumes and may have been as handsomely dressed as the men and as imposing. It is said that they all charged enormous fees. It is probable that these physicians had well trained slaves to accompany them on their visits and do the laborious work of preparing their drugs.

Sir Richard Burton,¹ in his translation of the "Thousand and One Nights," tells us the story of such an Arabic slave girl who knew so much of medicines and diseases that none of the medical teachers could confuse her with their questions. She had studied the whole of Galen's works, astrology, the humoral theories, and whatever was then taught of anatomy and surgery, which veins to open for bleeding, what were the remedies for poisons, et cetera,—as well as the Seven Liberal Arts, and Aristotle, and Christian theology or the Jewish Talmud. This remarkable slave girl's name was Tawaddud. She shows us at least what subjects were studied by the greatest scholars in the Middle Ages, and whether the story is founded on fact or not it is very enlightening.

Among the Jews of this century women physicians were in great demand; the Christians had special confidence in Jewish eye doctors and surgeons, male and female, although, as we have seen, Jews in general abhorred surgery and the Church refused to allow any Christian to employ a Jew.

A Jewish physician was called a "*rusticus*" or "*chirurgus*." Neuburger (p. 318, op. cit.) tells us that the Jews were considered the best practitioners in the twelfth century as well as the equal of the Arabs in translating manuscripts from Greek or Latin into Hebrew or Arabic. They left all the midwifery to their women. Whether the Jewish medical women were named Mary, or Rebecca, or Phoebe, or Zipporah, the women of the Bible were their prototypes.

The Jews seem to have differentiated fevers, digestive disturbances, and brain disorders better than the Christian physicians. Among their

¹ Burton, Sir Richard, *The Thousand Nights and a Night*, The story of Abul and his Slave Girl, 1885-88, vol. V, p. 189.

remedies are cabbage, beets, camomile, rennet, and such organs as the uterus and liver of animals, and certain portions of fishes. Their surgeons had scalpels, bistouries, trephines, lancets, cups, probes, gouges, saws, tenacula and dilators. They sucked poisoned wounds and cauterized bleeding points. They were taught to keep their hands away from wounds lest they cause inflammation, but they still believed in "laudable" pus.

Although gynecology and obstetrics were left entirely to the women, they understood the use of the vaginal speculum and midwifery instruments as taught by the women of Salerno. They were patient and sympathetic with patients in pain, and carried out the rules of medical etiquette laid down long before by Hippocrates.

VI. MONASTIC LIFE—ROYAL MEDICAL WOMEN OF THE 12TH CENTURY

WHEN we try to imagine the life of women in the twelfth century we must remember that a cell in a nunnery was probably as comfortable as the great hall at home, and that a life among other cloistered women, each busy in her chosen way, was less irksome than the daily routine of the average castle or farm.

Women who chose to enter a nunnery in those days were not obliged to take vows in perpetuity, nor to wear a special costume, nor to remain within their convent all day long. Nor was the asceticism of the nunneries as perfect in practice as in theory. That at Amesbury was so flagrantly immoral that its personnel was sent in a body to Fontevrault in exchange for a group of French nuns who were more reputable. The favorite mistress of Henry II, the "fair Rosamond," was one of the nuns of Godstow priory.

In fact often monastic life during the Crusades may have been almost gay. Each sister and every monk had daily duties in some department of the institution, under a cellarer or cook or pharmacist or teacher or hospital attendant. In the sewing department, especially in England, the embroideries and altar cloths were beautifully made. Fine tapestries were made by the nuns to hang on the walls of castles and cathedrals and parish churches. We read descriptions of these beautiful hangings written by Chrétien de Troyes who lived (1160-1172) at the court of the Countess Marie and must have seen many of the works of art which he describes.

These new cultural developments were one of the results of the

Crusades. With the stories brought back by pilgrims and merchants a new world was opened to those who stayed at home. New books came from Salerno and Monte Cassino, fresh translations from the Greek and Arabic. Both men and women wore elaborate jewelry, with either imitation or real gems, and the chest-bands, buckles, and twelfth century rings of men and women seen in the museums today are marvels of workmanship. Of the women's finery we read:

She had two rings on her right hand
And three she had on her left,
And she had a wimple perfumed with saffron,
Which she had worked of silk.

When they travelled we find that they went about on gaily caparisoned mules or horses, wearing a full cloak over a saffron or other colored gown.

We have noted that many royal women of the twelfth century devoted a part of their time at least to the care of the sick. Mention has already been made of the medical skill of Queen Margaret of Scotland, whose daughter, Matilda, according to Walter Map, was the "Holy Queen,"¹ wife of Henry I, of England, and the "good Queen Maud" of many centuries. It was she who founded the old hospital of Saint Giles in-the-Fields in London (1101) where she personally cared for the patients and wiped the feet of lepers with her hair. This hospital cared for any sick person as well as lepers. Matilda had studied medicine at a Wessex monastery, where she also learned to write and speak Latin fluently. Even after she had married she said that her heart was still with the sick. She died in 1118,² and by her will she endowed several hospitals and religious houses.

Eleanor of Aquitaine (1122-1204) was the daughter and granddaughter of French crusaders, so that it is not surprising to find her starting out with her husband, Louis VII of France, for the second Crusade preached so eloquently by Saint Bernard. Tradition says that she raised a troop of armed ladies and rode at their head. Divorced from Louis she soon married Henry II of England (crowned 1154), who by the marriage claimed that his kingdom stretched from the Orkneys to the Pyrenees. She had ten children by her two husbands and became the ancestor of many kings and queens. One of the most learned women of her century, our interest in her centers in the fact that she built

¹ Eckenstein, *op. cit.*, p. 290, quoted from Migne, vol. 159.

² *Ibid*, p. 209.

hospitals and personally cared for the patients, and in the medical interests of her numerous descendants.¹

Berengaria, wife of Alfonso IX of Leon, was another twelfth century queen noted for her medical knowledge. During her life five great monasteries were in existence in various parts of Spain, and the abbess of one of them, Las Huelgas, is recorded as having ably combined the duties of priest and physician, a very convenient role if she arrived opportunely at a time of birth or death. It is also said that Agnes, Countess of Aix, the prioress at another of the Spanish monasteries at this time, "treated the sick with pious care."

In Italy Capparoni found, among twelfth century records of Salerno, the names of *Berdefolia Medica*, and *Adella of the Saracins*, or *Saracinesca* family, both of whom were probably lay teachers of the medical faculty there. It is hoped that more records will come to light of the Salernitan school, and of the school built by Queen Bertha of Greece in Constantinople for the first crusaders. She was wife of Comnenus II. Her sister-in-law, Anna Comnena, was most skilled in medicine and was physician in chief at the great Pantocrator hospital.

VII. FAMOUS ABBESSES AND THEIR MONASTERIES

ALTHOUGH the twelfth century was the century of great monasteries, as well as of the Crusades and of chivalry, the monasteries of England were not so good as they had been, nor were their abbesses and prioresses as strict in discipline, nor the nuns as moral or devout as those of France and Germany.² We recall that the Empress Matilda

¹ Queen Eleanor's grand daughters, Blanche of France and Castile, 1188-1252, and Urraca of Portugal, were both so well educated in medicine that they likewise founded and worked in hospitals in Spain as well as in France. Her daughter Isabel was also noted for her medical skill. She founded the monastery of the Poor Clares, near Paris, and died in 1269. Among the other famous descendants of Blanche was her granddaughter Hedwig (1174-1243), the patron saint of Poland, who was married at the age of thirteen to Heinrich the Bearded, the Polish king. She had six children, all of them exceedingly religious. She built many monastic institutions and hospitals where she and her children personally cared for the sick and fed the hungry. Hedwig was canonized in 1267; but, while her memory is revered in Poland as one of more than human knowledge and kindness, her family, as Virchow has said, became extinguished because of its extreme asceticism. One of the legends of Hedwig tells us that "with wonderful tenderness she cared for those afflicted with bodily ills, and her affections melted towards the poor and infirm whom she tended with great love." In her pictures we see a well-nourished woman, simply clad, among several nuns in gray or blue gowns and black head-dresses.

² Power, Eileen, "Medieval English Nunneries," 1922, p. 289.

and her mother Margaret had been taken from monastic institutions to marry, and this was true of many noble women who ably carried on affairs of state after having been educated in convents. It made little difference with the husband that his wife had at one time worn the veil, and the sin of discarding it for matrimony was easily forgiven by the archbishops. Moreover, it was perhaps easier for rich women who understood the theory and practice of medicine to find patients and build hospitals for them when out in the world than when in an institution.

The rule of Saint Benedict as to the sin of idleness was translated into English for those who could not understand Latin:

"All that wons in religioun
aw to haue sum ocupacioun,
outher in kirk or hali bedes,
or stodying in oder stedes;
ffor ydilnes, as sais sant paul
es grete enmy unto the soul."

—Quoted from Eckenstein, p. 354.

But the standard of education in the English religious houses at this time was beginning to be lowered. It was cramped in method, and insufficient in application, says Eckenstein (*op. cit.* p. 356). Devotional interests were cultivated to the exclusion of many other subjects, and service books, the Bible and legends of the saints were what the nuns and also monks generally read or copied. They were taught some French but less Latin; in fact French was used in England as the spoken language more than English. As in France, there were certain infirmaries connected with the English monasteries where the sisters were taught to care for the sick members, pilgrims and guests, and from the twelfth to the fifteenth centuries there was a famous hospital at the monastery of Sion, now Sheen, on the Thames near London,¹ where the abbesses taught medicine and nursing to the nuns and deputed some of them for infirmary affairs. One such abbess warned them to be gentle and patient with the sick, often to change their beds and clothes, and give them medicine regularly, also to minister to them meat and drink, fire and water, and all other necessities day and night "after the counsel of the physicians and precepts of the sovereign"; "not to be squeamish in bathing them," nor "impatient with those who vomit or have the flux, or are crazy, for some sickness vexes the sick so greatly . . . that the matter drawn up to the brain alienates the mind."

It was France, however, which seemed to set the fashion in the

¹ "Myroure of Oure Ladye," Introduction, p. 29, Eckenstein, pp. 393-394.

development of monasteries during the twelfth and thirteenth centuries, as it also inaugurated here and there brilliant fetes and pageants to brighten the gloom of the families of the Crusaders. Tiraquellus¹ tells us that during this time women studied medicine in every part of Gaul in order to become good Samaritans, and that they traveled over their own country, as well as to Spain and Africa, wherever they were told that there was special sickness and suffering. They healed the gravest diseases and wounds, gathered herbs, tended midwifery cases, and sometimes lived alone in huts or trunks of trees to study or teach their pupils, all because of religious zeal.²

On the other hand, there were frivolous women to whom the little freedom from parental government and the reaction from the worries of the Crusades brought a wild orgy of sexual debauch, especially if they had been married by force, or virtually sold to men whom they could not love. Women who thus burst from the obscurity of their homes knew no restraint; and, if they were detected in immorality, the Church, for a consideration, would grant them indulgences for "such weakness of the flesh," and a nearby monastery would hide them for a time.

One of the most famous monasteries of France was that at Fontevrault founded in 1101, by Robert of Arbrissel, a traveling evangelist. He decided to found an institution for men and women and to place a woman at its head, "because," said he, "Christ when dying placed his beloved John under the care of his mother," and also because, as he said, Martha who was always busy "was the type of woman preferred by Jesus."³ This abbey soon became famous for the great number of royal women and men under its rule.

The first abbess of Fontevrault was Saint Petronilla. She "lived piously, governed sternly, and died holy." Others "directed by their counsel, favored by their prayers, and developed by their skill the greatest civilizing movements of the world." When Robert died, in 1117, he appointed a certain Hersende abbess. Evidently she was a good manager, for, before her death, she was Superior over five daughter-houses also, where were grouped as many as five thousand men and women. Four hundred other institutions, modelled after Fontevrault, were established during the twelfth and thirteenth centuries, where rich and poor, sick or well, pure women and prostitutes were received, lodged,

¹ Tiraquellus, "*De Nobilitate*," 1566, p. 310.

² Langlois, Ernest, "*Origines et Sources du Roman de la Rose*," 1891.

³ Abbé, Edouard, "*Fontevrault et ses Monuments*," p. 151.

fed, and cared for. It must have taken good planning to provide food for so large a company at a time when it took 120 acres of land to feed a single average family.

Naturally there was much sickness at Fontevrault, and many patients requiring definite hospital care. Among those needing isolation were one hundred and twenty lepers whose sores had to be washed daily. There were prostitutes to shelter, and midwifery cases. Foundlings were by no means uncommon, and illegitimate babies were not rare even in monastic institutions.

Conditions at Fontevrault were typical of those in all the monasteries of France all through the twelfth century. By the end of the incumbency of Matilda, the sixth abbess, more than five thousand people were living under her jurisdiction in Fontevrault alone. It was during her time that Henry II (died 1189), Richard the Lion Hearted (died 1199), his mother, Eleanor of Aquitaine (died 1204), his sister, and many worn-out Crusaders were buried in the great domed abbey church, where their tombs may be seen today. The kitchen and some of the other original buildings of the abbey have also been restored, and medical women should visit the famous abbey as a pilgrimage to the shrines of those French medical abbesses of the twelfth century.

Fontevrault, however, was not the only religious institution where medicine and religion were skilfully combined under an abbess. Perhaps the hermitage at Paraclete, in Champagne, was as famous in its day, for it was there that Héloïse lived and taught medicine and theology to her nuns, healed the sick, and wrote letters to her beloved husband, Abélard.

Héloïse (1101-1164) was probably the most learned woman doctor of France in the twelfth century. To give, even in outline, the story of her love for Abélard would lead us too far afield, but it may be said that when Abélard, a nobleman from Nantes, was forty years old he went to Paris and became the tutor of the brilliant Héloïse, who was then only eighteen. Although stubbornly insisting on the general inferiority of women, and laying great emphasis on their humble submission to men, he admired the intellectual abilities of his pupil and placed her above most men in character and learning. He was, however, the very antithesis of the gentle girl whom he bent entirely to his will. They were married secretly, and when this was discovered both the Church and the relatives of Héloïse punished him brutally and insisted upon their living apart for the rest of their lives. Abélard died in 1142, and Héloïse in 1164. Their graves are in the cemetery of Père Lachaise in Paris.

Héloise had been well educated as a girl in Paris. She was not only an enthusiastic student but sensitive to beauty and responsive to teaching. Abélard gave her what would now be regarded as a graduate course in medicine, surgery, theology, and philosophy. For twenty years after their separation and the death of Abélard she taught and practiced medicine at the hermitage of Paraclete, built by his disciples for their master, who established her and her nuns there in his place.¹ Because there were no monks at Paraclete, Abélard acknowledged that there were reasons why "women should have as good a knowledge of medicine as men." We have not been accustomed to think of either Héloise, or her lover, as physicians; but evidently they knew more about disease and its treatment than most of the men or women of the twelfth century. We can not, however, but blame Abélard for his attitude toward women in general. It has been said that it was he who accomplished the closing of the universities to women students and thus retarded their development for many centuries. He believed that no lay person should have a university education.

Turning now to the abbeys of Germany in the twelfth century and their heads, we find several women as remarkable as those of France, and among them one who easily stands above the medical men of the age, in originality at least. This latter was Hildegard (1098-1179) of Bingen—of whom more later. Among Hildegard's friends and acquaintances were Elizabeth of Schönau², born in 1129, who founded a Benedictine nunnery near Trier, where she died in 1165. She was famous for her visions and prophecies. But little is known to historians about her medical skill and kindness to the poor and sick, although she became a *magistra* in 1157. It was she who spread abroad the almost forgotten story of Saint Ursula and the eleven thousand virgins, and she became known to fame more as a writer and "sibyl" than as a medical woman, pretending, as she did, to understand the ways of the Lord by means of prophetic visions.

The women of the royal families of Andech and Meran, in eastern Germany, or rather in Silesia³, were all educated to care for the sick. Among them, as we have already seen, was Hedwig of Silesia who was born in 1174. She was sent to Kissingen for an education in the convent of Franken, was married in 1186, and became the mother of six children.

¹ Wheeler, Ethel Rolt, "Women of Cell and Cloister," 1913, p. 76.

² Eckenstein, pp. 256 ff., and F. W. Roth, "*Die Visionen der heil. Elizabeth, und die Schriften von Ekbert und Emecho von Schönau.*" 1884.

³ Ackermann, Joanne Christian Gottlieb, "*Institutiones Historie Medicinæ,*" 1792, p. 341.

She founded several hospitals, where the members of her family all tended the sick. She also founded a leper hospital and one or more Cistercian nunneries. Her sister, Agnes, married Philip Augustus of France, and another sister, Gertrude, became the mother of the beautiful Saint Elizabeth of Hungary. Her daughters-in-law, Anna and Agnes, were both famous in the following century for their medical skill.

Another famous German medical woman of this century, and also a friend of Saint Hildegard, was Herrade of Landsberg, abbess of Hohenburg in Alsace.¹ In 1167 she was already noted as a teacher of the entire Trivium and Quadrivium as well as of medicine and other sciences. She wrote one of the earliest encyclopedias of plants and their uses, called the "*Hortus deliciarum*" or "Garden of Delight," in which she shows an enormous range of knowledge. In 1187 she built a large hospital in her monastery at which she was physician in chief. Singer suggests that her medical knowledge came from the same sources as Hildegard's, mainly Salernitan, together with the old work of Isidor of Seville on drugs.

Hohenburg is in the Vosges mountains, 2500 feet above the sea on Mt. St. Odilia, between Basel and Mainz; and Herrade's abbey was surrounded by other monasteries and castles. Around the top of the mountain ran an encircling wall which in earlier times had enclosed an altar to one of the Roman gods. When Herrade ruled the monastery forty-seven nuns lived there, not distinguishable from the villagers by their dress except for a white cap and veil. Her *magnum opus* was written in Latin on 324 pages of parchment with 636 colored drawings. Besides describing plants and their preparation for medicinal purposes, it retold the stories of the Bible, with illustrations of its people dressed in the modes of her own time. This priceless volume was destroyed in 1870 during the siege of Strasburg, a few pages only being recovered and reprinted in facsimile in 1901.² Fortunately, it had been partly copied at an earlier time. She died in 1195.

¹ Herrad of Landsberg, "*Hortus deliciarum*," Eckenstein, pp. 238 ff. Roth, K. L., "*Der Odilienberg*," *Alsatia*, vol. I, pp. 91 ff., 1856. Wiegand, *Allgemeine Deutsche Biographie*, Art. *Reinold*. Engelhardt, "*Herrad von Landsberg und ihr Werk*," 1818. Herrade de Landsberg, "*Hortus deliciarum*." Soc. pour la Conservation des Monuments historique d'Alsace. 1901. This contains several hundred plates reproduced from the original, mainly Biblical and ecclesiastical. There is a picture of Herrade, standing, holding a placard containing her address to the community, "O white flowers, pure as the snow . . . may your course be directed always toward heaven." There are also pictures of "possessed" from whom the evil spirit is departing, etc., also a diagram showing the relation of the planets to the brain.

² Sarton, p. 389, op. cit.

Among the lesser known abbesses of Herrade's time were Gertrude of Robersdorf, whose night visions were almost as vivid as the day visions of Hildegard; Gertrude, Countess Palatine, abbess of Nivelles; Lioba of Fulda; and Otageba, Heilka and Gisel of St. Paul's convent at Regensburg, all of whom were also "seers and psychic healers."¹

In the Far North the influence of the Crusades was far less marked than in the South, but even in Scandinavia the twelfth century brought an impetus to art, architecture, literature, and geography, though perhaps little to the science of medicine (except surgery). These countries also had monastic institutions, but they were more like religious retreats



PROBABLY THE EARLIEST PICTURE OF A CAESARIAN SECTION
(From an edition of Suetonius: "*De Vita duodecim Caesarum.*" Venice, 1510.)

for pious men and women than like schools where medicine and the arts might be taught.

From archeological remains and written records of the Scandinavian peninsula and Iceland we can form some idea of the medical knowledge and practice in those countries in the Viking Age. Sigrid Undset, herself an archeologist, in her Nobel Prize volume, *Kristin Lavransdatter* (1922), has given us a glimpse of the everyday life of the

¹ Weinhold, Carl, "*Die Deutschen Frauen in dem Mittelalter,*" vol. I, p. 68. 1882.

day. Only women and priests had to do with the care of the sick; but, while the priests were supposed to cure their patients by the relics of St. Olaf, the women, as elsewhere in Europe all through the Middle Ages, collected herbs, attended women in labor, set bones, soothed patients in fever and pain, and even treated the insane. When Kristin's babies were born, all the married women of the parish crowded with her into the rude outhouse where she knelt in pain. Certain ones took turns in holding her on her knees on the floor, others prepared fresh straw for her bed, others made hot teas to hasten labor. After the birth of the baby one of the most experienced women greased and washed it while another reported to the father the sex of the child and swore that it was not a changeling substituted for his own offspring that might have died in birth.¹

VIII. SAINT HILDEGARD OF BINGEN

WHAT have been called "the greatest scientific works of the Middle Ages," were written by the Abbess Hildegard of the Rhine country. Her "*Liber Subtilitatum*," "*De Simplicis Medicinæ*," and "*Causæ et Curæ*," in originality² were in many respects years, even centuries, ahead of her time. Hildegard was, moreover, a philosopher, politician, and prophet. She foretold the downfall of the Holy Roman Empire which had been so carefully built up by Charlemagne; she predicted the Reformation as the result of the corruption of the clergy, and she foreshadowed also the true theories of the circulation of the blood, the causes of contagion and of auto-intoxication, the transmissibility of nerve action from the brain, the chemistry of the blood. She also tried to explain various other human phenomena without continual reference to the humoral theories of her time.

The most independent and learned of all medical women, Hilde-

¹ That many women died in childbed during this period is well known. If the labor were unduly prolonged, or if meddlesome midwifery had seriously infected the mother, there was nothing to do but bury the poor woman, having first removed the baby by Caesarian section or piece-meal. Such deaths were not peculiar to any one country nor to the common people. Schultz (a) tells us that Queen Constance, first wife of Louis VII, in 1152 died when her baby Adelaide was born; and he also mentions the fact that Blanchefleur, mother of Tristram, died in labor and the living baby was taken by Caesarian section after her death, many witnesses being crowded into the lying-in room.

(a) Alwin Schultz, "*Das Höfische Leben zur Zeit der Minnesinger*," vol. I, p. 144, 1889.

² Reuss, who wrote the article on Hildegard in Migne's *Patrologia* says that her "*Liber Subtilitatum*" is the most valuable record of natural science and medical knowledge in the Middle Ages, scientifically considered.

gard was the head of a small nunnery on a hilltop above the German Rhine. But, though she ruled a community of only fifty nuns, she dictated to popes, emperors, and kings the courses of action they should take. Her life almost spans the century; and her medical works and writings have come to be accepted as the most important Latin scientific contributions produced in Europe during this period.¹ Although Hildegard never went to Salerno to study and probably not to the new medical schools then forming in Paris and Montpellier, she must at least have had copies of the medical texts used at Salerno. She seemed to know little of Arabic medicine except by hearsay, for she used few Arabic remedies.

Even Hildegard's anatomical knowledge was conjectural, coming from the fanciful drawings of earlier centuries in which a big round heart is pictured upside down in the chest, the abdomen is shaped like a doughnut containing a coil of tubes, the bones are like jackstraws piled to balance a great moon-like head with enormous rows of teeth. In other pictures the spinal cord looks like a rope of braided hair divided at its lower parts into two strands, one for each leg; the liver appears to be the most important organ of the body, while the lungs are scarcely seen; the aorta is a mere tube invading each portion of the body with its branches; and the eyes frequently are crossed, showing perhaps that the early anatomists had some hazy notion of their connection with the brain.

Hildegard was born in 1098 at Boeckelheim, not many miles from Bingen on the Rhine, the youngest of a large family belonging to the nobility. She was sent to a convent at the age of eight to study with her aunt, Yutta, who was abbess of the institution at Disibodenburg on the Nahe river, a few miles south of her home. Here she began to have the curious day dreams, preceded by flashes of lightning, of which she wrote in her books. (She was probably a victim of migraine or epileptic attacks or perhaps of catalepsy, or hysteria.) Though far from well, she learned to write and read German, and to speak a little Latin. Her companions said that even as a child, "Hildegard miraculously cured all diseases." When she was thirty years old she was chosen to succeed her aunt as head of the convent. She then began to write the series of

¹ Tiraquellus, "*De Nobilitate*," pp. 310 ff., 1566. Thorndike, "Magic and Experimental Science," vol. II, p. 124 ff. Theodoric et Godefroid, 1556, "*Vie de Sainte Hildegarde*," pub. Paris, 1907. Hildegardis, "*Causae et Curae*," edidit Paulus Kaiser, 1903. Pitra, "*Liber Compositae Medicinae de Aegritudinem causis, signis, atque curis*," p. 468, 1882. Franche, Paul, "*Les Saints Series, Sainte Hildegarde*," p. 184 etc., 1913. Singer, Charles, "From Magic to Science," 1928, pp. 199-239. The Library at Wiesbaden has two manuscripts of Hildegard's works.

medical and psychological treatises, hymns, prophecies, and religious instructions for which she is famous.

Of her visions she said that they came when she was awake and yet not altogether alive, and she continues, "My body seethed as in a pot. For years the Cherubim pursued me with a flaming sword . . . until at length my spirit revived within me, and my body was restored again to its veins and marrow, and thus was I healed." She said that she sometimes felt like a jug filled with the Holy Spirit, talking, writing, or acting under angelic influences and that at such times she was able to give absent treatment to the sick, the blind, and the dumb, and those in fever. Her contemporaries, with fervent belief in her spiritual gifts, evidently encouraged her in these visions and miracles until years later, when she somewhat outgrew such ecstasies, and became, as we should say, quite sane and practical.

In 1147, when about fifty years old, Hildegard and some of her followers were allowed by Heinrich, the Archbishop of Mainz and friend of Saint Bernard of Clairvaux, to build a new convent at Rupertsberg in the hills across the Rhine from Bingen, where they hoped to have more peace than at Disibodenberg. There they lived for forty years among the terraced vineyards of that beautiful country where they were visited by royalty and clergy, abbesses and monks, and especially by Saint Bernard¹ who regarded Hildegard as a prophetess of great power. From Rupertsberg Hildegard corresponded with four popes and five emperors and kings, among them Conrad III and Frederick Barbarossa, and the kings of England and France. She apparently had great influence over the affairs of both church and state.² She also traveled widely in Germany and France, visiting monasteries and other church institutions, teaching medicine and theology, and giving advice to abbesses and prioresses and nuns. For their use she invented a new language, a sort of combination of easy Latin and German. Some biographers say that Hildegard went to Rome to visit and reprimand the Pope, others say that she went to Paris to warn Louis VII about his kingdom, but these journeys to foreign countries are denied by others. None deny, however, that she was an indefatigable letter writer and teacher, taking long trips—on horseback of course—accompanied by a troop of nuns and servants, a rather strenuous matter for a woman nearly eighty

¹ Saint Bernard died in 1153.

² Saint Bernard, Pope Eugenius and the Archbishop of Mainz used Hildegard's "*Scivias*" as an inspiration for the second Crusade.

years old.¹ We can easily believe that she not only gave but obtained information on all kinds of subjects wherever she went, for Tiraquellus (op. cit., p. 310) tells us she was exceedingly learned, "*celebris eruditione et sanctimonia, inter multa doctrinae, suae monumenta scripsit in medicina, quae simplicia, quae composita tollendis aegritudinibus prosunt.*"

Saint Hildegard is said to have written fourteen books, some of them in several volumes. She was helped in the mechanical work by several monks and nuns, among them Hiltrud of Sponheim, whose knowledge of Latin was shown in the "*Scivias*," and by Richardis, sister of the bishop of Bremen, who died in 1168. Richardis had also worked on Hildegard's early medical books. It is possible that she thought her own knowledge of Latin grammar faulty, for she says that the Lord guided her pen throughout all her work. It is evident, incidentally, that her contemporaries regarded her with great reverence, otherwise she would have been accused of heretical teachings.

Hildegard wrote her poems, and her philosophical and theological works, between 1141 and 1158, because of her "lightning-like day-dreams and the promptings of the Holy Ghost." Her first book, the "*Scivias*," or "*Nosce Vias Domini*," was greatly admired by the Pope, and by Saint Bernard. Then came the "*Liber Vitae Meritorum*"; and, after 1163, the medical books, the "*Causae et Curae*," the "*Liber Simplicis Medicinae*," on the composition of medicines, the "*Physica*," the "*Liber Compositae Medicinae*," in eight parts, and the "*Liber Operum Simplicis Hominis*," in which latter she made many original observations in the art and science of medicine.

The "*Physica*," on the nature of man, creatures and plants, has been called by Virchow "an early materia medica, curiously complete considering the age to which it belongs."² It was first printed in the sixteenth

¹ Miss Grace Latham, British Museum, May 28, 1929, gives the following information: "Women were accustomed to riding almost as much as men; when they had to travel they usually did it on horseback, riding astride. The custom of riding sideways did not spread in England before the latter part of the fourteenth century, and even then it was not general. In Ms. of Decretals ladies on horseback . . . are represented riding astride." Ivories in the British Museum also show this as well as ivories in the Victoria and Albert Museum. In the Ellesmere Ms. of Chaucer's *Canterbury Tales* the Wife of Bath rides astride with large spurs, but the prioress sits sideways. In the edition of 1498, p. 104, they both sit sideways. See Jusserand's "Wayfaring Life in the Middle Ages," p. 103, etc.

² Eckenstein, p. 269, gives references to Jessen, "*Botanik der Gegenwart und Vorzeit*," pp. 120-127, 1864, and to Virchow and Haeser. Also she refers for the life of Hildegard to Reuss and others in Migne, vol. 197, written by the monks Godefrid and Theodor, her contemporaries. Also to Schmelzeis, "*Das Leben und Wirken der heiligen Hildegardis*," pp. 538 ff., 1879.

century, and contains references to nearly 500 plants, metals, stones, animals, giving their value as medicines to human beings. Sarton says, vol. II, p. 70, that the "*Physica*," written by Hildegard of Bingen, "the most original medical writer of Latindom in the twelfth century," was a "medical summary of the medicine of its time" (p. 310). He also says, (p. 293) "the greatest personalities of the West were Hildegard, John of Salisbury, and Gerard of Cremona; they were, however, pigmies compared with the Arabs Maimonides and Averrhoes." This statement we must further examine later. Many other writers have considered Hildegard the most distinguished naturalist¹ of her century.²

Hildegard's "*Liber Subtilitatum*" is called (Reuss, p. 500, Migne vol. 197) "the best of the Middle Ages, scientifically considered." It is full of observations on zoology, botany, folk-medicine and psychology. Neuburger (vol. II, p. 39) says that this book, though originally Hildegard's, has received many additions at the hands of copyists. Singer considers it, as well as the "*Causae et Curae*," spurious and not attributed to her until a later date. Sarton does not agree with Singer; but it must be admitted, as Singer and others point out, that there are many disconnected passages in the book, more than a few repetitions and lack of careful arrangement and carelessness in expression. This, of itself, however, is no evidence that the work as a whole is not Hildegard's.

The "*Liber Divinorum Operum*" was written after the author was in her seventy-fifth year. It contains 187 chapters, in which she discusses anatomy and physiology and the atmospheric changes which cause disease.³

One looking carefully into these various medical books of Saint Hildegard will readily understand why they had so great an influence upon the people who read them, and why nobody but a true observer of nature and an experimentalist could have written them, notwithstanding that she expressly says that all her studies derived from the Bible. She regarded the brain as the ruler of the senses and functions of the body, and fatigue as due to the over-tension of the nerves caused by the decomposi-

¹ In the "Creed of Piers Ploughman," line 1401, in English, we are told to "hearken to Hildegard," showing that her influence was still felt one hundred years after her death.

² Matthias of Westminster in 1292 copied Hildegard's "*Liber compositae medicinae*." The "*Artzeneyen Buch*" was written by Volnarus, a monk, at her request, 1150-60. This is in the Bib. Nat. Paris, illustrated with pictures of many strange beasts.

Schultz also praises Hildegard. "*Eine grosse Kenntniss der nutzbaren Krauter hat die H. Hildegard*," vol. I, p. 202.

³ Thorndike, Lynn, op. cit., p. 124. See also Singer, op. cit., pp. 12-14.

tion of humors. The blood, according to her theories, carries poisons as well as food to the tissues, there being little difference between the work of veins and arteries. The liver, the seat of the heat as well as wisdom of the body, was to her as important an organ as the stomach, which "sharpened the food and cooked it." This last theory she got from Aristotle.

When Hildegard felt obliged to refer to the four humors she half apologized for going so far back in traditionalism. Then she proceeded to explain diseases of the skin as due to dryness of the blood, and fever as due to the lack of power in the three vesicles of the brain to cool what blood the liver had sent it, or to the failure of the body to absorb an excess of moisture, or quiet the agitation of the blood.¹

Hildegard's theories of generation were mainly taken from Aristotle—but with embellishments. She excuses herself for discussing the topics of sex by referring to her advanced age, for "*naturalia non sunt turpia*." She believed that the female provides nourishment for the unborn child from her menstrual fluid, but that the male provides its shape and soul. She says that the soul, however, comes from God before the child is born through a hollow tube attached to a sort of kite in the sky. The intellect is attached to the soul as the arms are to the body; and the soul therefore rules the body, manifesting itself through the will as well as by means of the intellect.² At the birth of the baby ten invisible nurses bring it gifts, but one Evil Spirit lies in wait to harm it. The gifts are shaped like cheeses, some hard, others soft, each containing inherited characteristics for its soul. Obviously we need not go more deeply into these theories of Hildegard, but turn to her ideas of the creation of man, Adam, who was made by God out of green earth while Eve was flesh of his flesh and therefore was much weaker than he, and not capable of having female offspring any stronger than herself.

Hildegard writes continually about this weakness of woman's will and her lack of bodily strength. Yet she has the "divine breath in her medulla" and must perform her share of the work of generation. If Eve had not eaten the apple, the veins of her descendants would carry only good blood and children would be born painlessly and with greater vitality. Eve was carnal, but Adam was a spirit from God. At death

¹ These theories of fever compare interestingly with the experiments of Professor Henry G. Barbour at Yale University, that the liver does abstract water from the blood in fever.

² Singer, Charles, "Studies in the History and Methods of Science," pp. 45-54.



THE ARRIVAL OF A SOUL IN THE BODY OF AN INFANT.

(From a Wiesbaden manuscript of Hildegard's "Scivias," written at Bingen about 1180. Reprinted by permission from Singer's "From Magic to Science.")

the composite soul departs from the body through the mouth, and is at once seized by devils or angels according to its deserts. Hildegard was not the only one of her generation who believed this latter, for we find it represented in paintings as late as the Renaissance, and later.

In her pathological studies Hildegard ranges over the whole body, from embryology to the decay of old age, from headaches, vertigo, and brain fever to heart pain due to gas in the stomach, coughs, gout, jaundice, dysentery, diseases of the kidneys and bladder and their diagnosis by the appearance of the urine. She follows Trotula in her study of gynecological diseases, including sterility, dysmenorrhea, etc. For sterility she advises the patient to eat the pulverized uterus of a lamb—which, she says, is curative, "if God wills." Mental diseases, however, were her specialty. She had evidently studied her own case carefully and had come to the conclusion that epilepsy is under the control of the moon; that, if the moon is in a certain phase, a newly born child will be the victim of certain mental diseases such as epilepsy, or will be deceitful or sly, or a thief, although physically strong; "for the brain is the ruler of the body, but the moon rules the brain."¹

Although Hildegard's knowledge was naturally influenced, like others of her time, by astrology and alchemy, she was skilful in the observation and diagnosis of disease, which she carefully differentiated from one another; and she was much wiser in her treatment by diet and hygiene than her predecessors had been. Believing as little as possible in astrology, she was one of the first to see that the sun, rather than the earth, is the center of the universe, and that the sun is the great healer of man's ills, as well as "the controller of the stars." The moon might influence tides, winds, and weather; winds might affect the humors of the body; the Holy Spirit alone could intervene to prevent the disastrous effects of these elements upon mankind.

But, despite her crude beliefs as to the primary causes of disease, Hildegard had a practical knowledge of most of the four hundred and eighty-five plants or drugs which she considered useful for pathologic conditions of the body. She fervently believed that each remedy, whether animal, vegetable or mineral, was especially created by God for man's benefit. To her credit it must be said that she prescribed her medicines to be taken in small doses, with an enormous quantity of water

¹ Sudhoff, Karl, "*Ein Beitrag zur Geschichte der Anatomie im Mittelalter*," 1908. Singer, Charles, "Studies in History and Methods of Science," vol. I, p. 46, 1917. Thorndike, Lynn, "Magic and Arabic Astrology, Medieval Cipher," vol. I, p. 715.

or milk, or frequently by inunction and massage, and she ordered sleep, exercise and diet in good proportions for her patients. She was careful to order simple and cheap medicines for the poor, compound and expensive ones for the rich. Sometimes she draws spiritual lessons from her cures, like another old writer of the period, who saw divine wisdom in the absence of hair from the cartilages of the eyelids.

As to diet, Hildegard copied her predecessors, but, as has been noted, she stressed the copious drinking of water, and of boiling it if it came from swamps. Barley water she considered better for the kidneys than plain water, but she had many reasons for not drinking beer and wine, the chief reason being that they might not be sufficiently hot or cold for the blood. Barley she thought both cold and moist, and that its juice purged the bowels, strengthened the body, and cooled the system. In certain months of the year spices were to be added to the drinking water, as for example, ginger tea in January, a combination of spices—pepper, cinnamon, cloves, honey, strong wine—to be taken after each meal in March, absinth in April, and fruit juices in December.¹

That Saint Hildegard was reverential, and had no intention or thought of heresy, may be seen in every chapter of her book. For instance, the title of the third chapter of the "*Causae et Curae*" reads: "*De praedictis autem infirmitatibus subscriptae medicinae a deo monstratae aut hominem liberabunt aut ipse morietur aut deus eum liberari non vult.*" In this chapter she takes up the diseases of the body seriatim, beginning with the head and its various parts, and then considering all other organs, and their physiology and pathology, including tumors of the kidneys and bowels, fistulae, diseases of menstruation, and sterility. We must remember that she, unlike Trotula, was not writing a work on gynecology and pediatrics primarily, but a general encyclopaedia of medicine to be used as a text-book. She evidently felt herself called upon to treat the subject of generation earnestly and practically.

Hildegard had her own theories of the causes of pain. She thought that headache was not as common in women as in men because men worried and over-ate to a greater degree than women. But even women might have "repercussion in the meninges" and trouble with their eyes, ears, or bowels, and then have headache. For such a condition she would give the patient a purgative, put him to bed in a quiet, darkened room, give him magnetic iron water to drink, place cool compresses on the head, and give him oil of roses and vinegar to inhale, or, if necessary,

¹ Neuburger, op. cit., p. 308.

use a feather to paint his temples with an evaporating mixture, all of which sounds quite modern and efficacious. She gives advice as to the treatment of forty-seven diseases (prescribing hellebore and scamony for melancholia), and advises the use of the soporific sponge of the Salernitans, which contained, as we have seen, a mixture of ingredients—among them opium, hyoscyamus, mulberry juice, lettuce, hemlock, mandragora and ivy. Incidentally Hildegard says that, if the patient seems to be dead, he may be wakened by smelling fennel juice.

For many of her remedies she must have consulted the works of Dioscorides or of the Archbishop Isidor of Seville. She treats certain diseases of women with the fibres of mandragora steeped in the breast milk of a woman who has a baby three months old. For dysmenorrhea she prescribes asphodel root steeped in wine as a compress to the abdomen; this was also used for toothache, baldness and deafness. Althea seeds were prescribed for many diseases—cooked with wine. This preparation by itself was good for gout; mixed with fennel and flaxseed she used it for an inflamed breast; combined with turpentine and oil it was good for sterility and to relieve strangury, to remove spots from the skin, or to ease the pains of dysmenorrhea and testicular swelling.

Fevers were seldom differentiated in those days, but quotidian, tertian and quartan were unmistakable to Hildegard. For these she prescribed a decoction of the bark of the medlar tree which she must have imported from the South. For stomach ache, she used, among other remedies, a tea of laurel berries, taken as hot as possible. For cough she had a syrup of pears and rosemary, or a syrup of figs with wild cherries; for hemorrhage from the lungs, nose, or wounds, she used leeks with roses, or powdered nut galls, and turpentine; for fistula, a preparation of Dutchman's pipe; for bruises, cyclamen (which Trotula had praised). Mallows she prescribed for eye-washes; heliotrope for varicose veins; water-lilies and polygnum for dysentery; gladiolus for diseases of the bladder. Figs had many uses; fresh or dried they soothed the stomach, moved the bowels, nourished the members, provoked sweating, quenched thirst in fever, cured dropsy, made a comforting poultice for the eyes or for a gouty foot, or, prepared as a thin gargle, benefited sore throat. Fennel and cardamon seeds were universal remedies, and nearly all our native flowers and garden vegetables were somewhere found in her pharmacopoeia.

Poisoning was a common ill in the twelfth century, whether resulting from intentional administration or the accidental bite of snakes,

centipedes, or what not. There were many antidotes for poisons, efficacious if used quickly, but theriac was then still the most popular remedy. If made in Venice it was costly, for it contained more than seventy ingredients. It is even now found on the shelves of the apothecaries in remote parts of Europe, though its formula is less complicated than it was in Hildegard's time. Besides theriac, there were other remedies so expensive as to be available only to the rich. Hildegard, however, had cheap remedies for the poor. Where the flesh of unicorns and camels and elephants was costly, whale oil was cheap, and she used it for lung troubles, especially for pleurisy. She also prescribed salmon liver for other diseases of the chest, carp flesh as a diet in fevers, and eels for pediculosis. For the more obstinate troubles of the rich there were preparations of the bodies of griffons, peacocks, storks, tigers and leopards. On the other hand, mice and rats were cheap. So, to cure a fever: catch a mouse, stun it, and bind it between the shoulders of a patient. When the mouse dies the fever will vanish. For itch her preferred remedy was to draw a live herring over the spots on the skin, while for eczema the ashes of a goat were considered good—if used for a sufficiently long time. These latter remedies were derived in the main from old German folk-medicine, although Galen had advocated remedies just as crude and empirical.

There was a sufficient amount of common superstition in Hildegard's methods to alarm at times the heads of the Church as savoring of heresy. Her lay contemporaries, however, believed that she had more than human skill in casting out devils, as well as in her cure of blindness and lameness, and even of leprosy by her laying-on of hands. Crowds of patients waited at her door every day for help, and none was ever turned away comfortless. She sometimes used wet clay as an application to their paralyzed legs and arms, or to their blind eyes. Often she prayed with them, and on occasions she taught them to repeat such phrases as "Lazarus slept, he is awake, Christ removed his disease, rise up and be healed"; but this sleep was to be taken beside a sleeping donkey.¹ She also believed in gathering herbs at a certain time of the moon, or when the stars were in a certain position. Plants with black fruit were supposed to be evil, and to belong to the lower world, like the blackberries abhorred by Isis. The mandrake was not only to be pulled up by a dog, but was to be soaked in a spring for twenty-four hours before being laid in the bed of a patient, where, if his perspiration warmed

¹ Wehrli, G. A., "Essays on the History of Medicine," edited by Chas. Singer, p. 385.

and dried it, his pain would be cured. Moreover, depending on whether the mandrake was a male or female plant, it had different uses; for the leaves of the male plant, being the stronger, might be harmful to a woman patient.

She says little about surgical work of her own. She believed in great cleanliness in handling wounds and in the care of women in labor, and this at a time when the conventional dressings for wounds were hot oil or boiling wine, which scalded the surrounding tissues. Not until the seventeenth century did Ambroise Paré dare tie the bleeding points and close a wound. Often faeces and urine were used as dressings or poultices, as in fact they are used even today in parts of the world where education as to germs has not penetrated. Hildegard must have had an inkling of the germ theory of disease, for she remarks that where the blood is thick in fever worms may grow and cause the death of the patient. If she ever took charge of obstetric cases, she fails to say so. For sterility, a curse to the women of her time, she had many remedies—all absurd. One was to hang a piece of parchment around the patient's neck containing these words: "*Dixit Dominus, crescite et multiplicami, et replete terram.*" If this talisman failed, the crushed and softened uterus of a sheep was to be eaten while repeating the formula. The following was her cure for a difficult labor: place the heart of a lion over the umbilicus of the patient for a short hour, then bury it. If not effective, the heart must be steeped in water and taken as a tea. What was done if this failed, or if the heart of a lion could not be obtained from near-by pharmacies, we do not know!

Like Trotula, Hildegard described the symptoms of both gonorrhea and syphilis without calling them by name. She believed that they indicated some form of catarrhal bladder trouble caused by "seeds sown in the genitalia," and for the condylomata she insisted upon prolonged treatment with washes and ointments containing mercury, a very old remedy and one greatly abused. Diabetes was to Hildegard another form of bladder trouble in which the blood lost too much water. The patient must, therefore, be treated by a special diet lacking in nuts and sweets, spices and liquids.

Thus we have taken a very cursory review of the life and times and medical teachings of Saint Hildegard of Bingen who died in 1178. She was known for centuries as the Sibyl of the Rhine, and, although not canonized, her name was placed on the list of Roman Martyrology. Pupils and patients flocked to her convent. To all her students she insisted upon thoroughness in diagnosis, accuracy in observing symptoms

and recording them, the diligent study of the pulse and urine of the patient, and the building up of his constitution, omitting nothing which might add to his well-being. To all the sick she was kind and gentle, encouraging them to rely upon God if human help seemed futile, and using her psychological insight both in their treatment and in her own diagnosis of their diseases.

Besides this interest in medicine Hildegard was a devotedly religious woman, profoundly in sympathy with the teachings of the Church and Bible, believing, like Ambroise Paré, that, whatever she did to help the patient, it was only God who healed him. One of her contemporaries wrote of her in 1158, "In these days God made manifest His power through the frail sex in two maidens, Hildegard and Elizabeth, [of Schönauf] whom he filled with a prophetic spirit, making many kinds of visions apparent to them through His messages, which are to be seen in writing."¹

¹ The chief biographers of Hildegard were two monks, Godefrid and Theodor, her contemporaries; the former wrote a part of her "*Scivias*," the second wrote of the later years of her life and finished in 1191. This material was used during the inquisition in the middle of the thirteenth century *pro* and *con* her beatification, and it has given a more complete biography of her life than otherwise could have been possible unless it had been an actual autobiography. There are two copies of her "*Scivias*," with illustrations, in existence, probably made during her life-time, now in the library at Wiesbaden. There are several reprints of most of her books, the first edition of her "*Physica*" having been edited by G. Kraut in 1544 at Strasburg, and published by Johannis Schottus as a copy of an original volume of 1533. This volume contains her chapters on the elements, some German rivers, metals, vegetables, fruits, herbs, trees and bushes, fishes, birds and animals, operations, unusual experiences, etc.; also extracts from Oribasius on medicinal plants, Priscian on diets, and Aesculapius on diseases and their treatment. In an edition published a little later by Wolff we find these same articles by Hildegard and the above writers together with Trotula on the diseases of women. The volume contains very complimentary remarks as to the great medical ability of these women. We recall also that Priscian's work was dedicated to a woman named Victoria, showing that for practical medical work each century had to have women physicians as well as midwives. Migne, in vol. 197 of the great "*Patrologia*," gives more than thirteen hundred columns to Hildegard's works, including those on her visions and the medical books, including nine on *materia medica*, one on botany, one on zoology, and one on minerals.

Schottus said that Hildegard wrote better than any other medical writer then living, not excepting Avicenna—high praise indeed. Migne (1855) said that she was the most important religious writer who practiced medicine in the Middle Ages, and that her "*Liber compositae medicinae*" and "*Liber simplicis medicinae*," although containing the views of her time, were full of new facts from her own observation. Paulus Kaiser in 1903 published an illustrated edition of the "*Causae et Curae*," and Alfons Huber translated into German her book of animals and birds, with amusing contemporary pictures dated 1150-1160, and he gives a glossary of her medical remedies from which quotations have herein been made.

wounds, and healed him at once. In the English story, "Amis and Amiloun," when Sir Amiloun is struck with leprosy, the wife of Amis takes him into a quiet room, removes his clothes, bathes him, applies salves and clean cloths to his sores, and heals him, thus saving the lives of his children who were to be sacrificed so that their blood might be used for this purpose. In the German epic of "*Gudrun*" there is a wise, "wild wife," meaning by that simply a native of the country, who knew all about healing herbs. In the story of Gawain a woman examines Gawain carefully to see if he is yet alive. She feels his pulse in the neck and abdomen, notices the warmth of his body and his perspiration, and brings him back to consciousness. In the same tale a knight is "healed at a fair castle" by two maidens, who, *mirabile dictu*, also cure his sick lion!

The first accounts of the romantic adventures of the knights of King Arthur seem to have been written in the twelfth century by Chrétien de Troyes, who was living at the court of the Countess Marie, daughter of Eleanor of Aquitaine and King Louis VII. between 1160 and 1172, when the pilgrims were returning from the south of France with the songs of the Troubadours on their lips. In each of his four romances Chrétien finds something to say about the medical skill of women, either as physicians or surgeons.¹ In "Erec and Enide" there are two charming sisters who are skilful in the care of wounds. When Erec is wounded Guivret and Enide lay him on a high bed of quilted coverlets, out-of-doors, give him hot wine diluted with water to drink, and wash and bind his wounds. When he has been put to bed in an airy room, the sisters remove the dead flesh, apply plaster and clean lint four times a day, feed him nourishing drinks containing "neither garlic nor pepper," and after a fortnight he is able to walk. Chrétien adds that there was no need to instruct these damsels, for they understood the treatment well. In another story, "Yvain and Lancelot," we find a doctor coming from Montpellier "who was more skilled than any other man in treating wounds," permitting the reasonable inference that in his day both men and women were equally skilled in surgery.

In another of the tales of Chrétien, "Cleges," a nurse named Thessala, to avoid certain complications, gives a sleeping potion to Fénice, the Queen, to make her appear to be dead. The urine of a dying person is sent to a doctor for diagnosis with the pretense that it is from the Queen. The diagnosis is naturally so bad that the death of Fénice is accepted as a fact by the Court until four aged physicians arrive from

¹ Chrétien de Troyes, "Erec and Enide," Everyman's Library, 1913.



TOBIT AND ANNA, OR THE LADY AS PHYSICIAN.

Tobit is in bed. Anna concocts medicine for him, according to a prescription book on her knee. The nurse stands by. (From a manuscript dated 1470, the Historia Scholastica, in the British Museum.)

Salerno and attempt to resuscitate her by entreaties, threats, beatings, pouring boiling oil into the palms of her hands. Finally as a last resort they prepare to place her over a red-hot grill. At this the women of the Court interfere, throw the doctors out the window, and kill them. The nurse then comes again, pretends to prepare the body for the grave, but really anoints it with healing ointments. It is placed on a feather bed in a great stone coffin, and lowered into a sepulchre surrounded by soldiers. To make a long story short, the Queen comes to life at the appointed time, and the nurse restores her to health in a fortnight.

In the story of "Tristram and Isolde," when Isolde leaves Ireland for Cornwall to become queen, her mother gives her a chest of drugs and poisons and teaches her the use of them. In Wagner's version of the story Tristan asks eagerly, "*Kommt die Aertztin nicht?*"¹

In the story "Elias of Saint Giles," Rosamonde, a Saracenic princess of the twelfth century, takes the wounded Christian knight, Elias, to her home and heals him, for, says Wright,² "she, like the rest of her sex in those days, was a good physician."

In another old tale, that of "Aucassin and Nicolette," it is Nicolette who sets Aucassin's broken shoulder, and binds it "with grass, leaves and flowers, and the flap of her chemise." A demoiselle of a castle, in the "Roman de la Violette," takes Gerard into a chamber, examines his wounds, applies ointments, and he recovers. In an old Bible story, which is told again and again in the Middle Ages, Anna prepares a medicine for her old blind husband, Tobit, from a receipt in her medical book, and he is cured. In the epic, "Diedrich of Bern," a story based upon Attila the Hun, the hero is healed by a woman by means of herbs, lotions, baths and medicinal bandages. It is evident that these stories did not strain the credulity of their hearers.

In other tales, as in the story of the wife of Robert of Normandy, who, when he returned to Salerno from his journey to Jerusalem, had an open wound and seemed doomed to die,³ a woman doctor sucks the poison from a wound and heals a knight. Frequently, in these mediaeval stories, we find women making salves and applying them, cooking herbs, reciting healing formulae over patients as she gives them soothing drinks,

¹ Tennyson, in "The Death of Oenone," makes Paris say to Oenone, his jealous wife, "Thou knowest, taught by some god, whatever herb or balm may clean the blood from poison; my life and death are in thy hands." Oenone lets him die, and then commits suicide.

² Op. cit., "Womankind in Western Europe," 1869, pp. 110, 184.

³ In Scandinavia, a mother was always supposed to suck the pus from the ears or sores of her suffering children, and especially the discharge from their eyes when they had measles.

and gathering remedies according to time of the moon. This sort of thing comes into the story of Parzifal.¹ We read of plasters made of white of egg and mustard or clay, of styptics made from vinegar and spices, of stimulants prepared from the juice of grapes and the milk of sweet almonds. One "Old Queen" is said to have slipped a ring between the teeth of a fainting man and carefully dropped cold water into his throat to revive him, then to have washed his wounds with dictamnus and warm wine, and to have given him a dose of theriac because she feared he had been poisoned. He slept for a while and recovered.² Migne tells us that the women learned of these remedies by reading Aegidius of Corbeil, or the books of the doctors of Salerno.

Such tales of love and adventure, as well as of healing, were constantly being carried from the South to the North by troubadours and minstrels. The Icelandic Sagas and the poetic Edda of the twelfth century developed a remarkable body of literature from the traditions of their own Vikings and Scandinavian heroes. In many of these tales women act as physicians and surgeons, showing that customs did not differ though countries were widely separated.

Together with their knowledge of herbs, the women of these stories were often conversant with magic. They had magic stones which could draw poison, or even an arrow, from a wound if properly applied. Fossil belemnites, inscribed with runes, were thought to work wonders, especially if they came from St. Hilda's abbey at Whitby. If heated with vinegar, and placed in the bed of a patient when he was asleep (and if enough clothing or animal skins were heaped over him and he perspired freely, and if it were God's will!) he would be healed. From this belief in magic stones it was only a step to a belief in other charms and amulets. Plants were thought to be conscious, and even intelligent; so that they could and would withhold their efficacy if not properly plucked. Mistletoe, beloved of the so-called Druid women in Wales, Ireland and Brittany, if correctly used, would ward off evil spirits. Flax and lotus flowers might appease the god of light; and blackberries, once the bane of Isis and the Egyptians, were now universally avoided.³ Like the men of the time, the women believed in weird animals, such as were never on sea or land, and that men could be changed into wolves, and

¹ Schultz, Alwin, "*Das Höfische Leben zur Zeit der Minnesinger*," 1889, vol. I, p. 202.

² Migne, Patrol. vol. 197, p. 1125, *et seq.*

³ Wehrli, G. A., Article in "History of Medicine," edited by Charles Singer, (presented to Sudhoff) 1894.

women bring forth snakes and dogs. Any natural object, from clouds to rocks and plants, was likely to be personified, and any queer story of magic might be accepted as true, even if obviously freshly embellished in the telling. The strange beasts described by the traditional Sir John Mandeville were solemnly believed to exist somewhere, and so late as the sixteenth century Ambroise Paré described monsters so absurd as to make anybody nowadays doubt the tale, but these beasts were apparently accepted then without a sign of unbelief.

Among the women writers of Bestiaries in the twelfth century was one who is often spoken of as a man. Her name was Philippa, or Philippe de Thaön, perhaps the daughter of the more noted Philip, and perhaps his secretary. She, or they, prepared a book of animal stories in verse, the earliest version of the "*Physiologus*,"¹ a popular treatise on science, stones, birds, and beasts, during the Middle Ages. This was dedicated to Adelaide, the queen of Henry I, evidently because the queen was more of a medical scholar than the king. These stories were as believable as any of their kind, and for years they delighted the ladies of the court. To animals were attributed cruel but human vices or beatific virtues. The lion, son of the Virgin Mary, was king of the world, and he "would be terribly hard on the Jews at the Last Judgment." The donkey, a Jew by nature, was to be punished because he believed in God only by force. The monkey was the devil. The pelican was the type of Christ "*Il nostro pellicano*" of Dante. The turtle was the widow of the Church. A bishop of Monte Cassino also wrote an animal book in verse to teach the meaning of such incomprehensible animals as those of the Apocalypse, for example, the snake, the fox, and the devil, being synonymous, taught the doctrine of the Incarnation, for, as the "stag inhales snakes and becomes overheated thereby, and rushes for water, so mortals being full of the devil, must rush for the cooling springs of religion." Rats and mice were also useful in teaching great religious lessons as to heaven-sent inflictions. They were even then

¹ Students have been seriously puzzled by the differences in style and diction of parts of the *Physiologus* or *Bestiary* of Philip or Philippe de Thaön or Thäin. Max Friedrich Mann of Leipzig has studied various manuscripts in several libraries and has come to the conclusion that the authors were merely translators or copyists from the Latin into old French, with the addition of certain tales from memory and with possible original embellishments of their own. Much of the material comes from Isidor of Seville and is written in a variety of hands, one of which may have been that of a woman, perhaps the daughter and amanuensis of Philip; we may add that there is no reason for the tradition that the work was in a real sense original, but what praise is bestowed on the writers may as well be shared with women.

associated with the plague and so came to be identified with the souls of the dead, reminding us of the Hindu theories of transmigration of souls. The stories of the Bishop of Hatto and the mouse tower on the Rhine, and of the Pied Piper of Hamelin grew up among people to whom these other stories were full of meaning.

The belief in the medicinal properties of stones has already been referred to. Alabaster healed the lungs; beryl was good for eye diseases; coral and agate protected from lightning and wounds, cornelian from hemorrhage, chalcedony from poisons; emeralds aided pregnancy and procured an easy delivery; amethysts were galactagogues, and prevented drunkenness; magnesium proved chastity, and cured dropsy; and sapphire gave the power of divination. These superstitions have not entirely vanished even today.

X. THE 12TH CENTURY—MEN PRACTITIONERS

AMONG the Englishmen who were writing books on medicine in the twelfth century were several whom Hildegard must have known by correspondence, if not in person, Alexander of Neckham, Adelard of Bath, and Peter Comestor, the "eater of books." The first named¹ was a foster brother of Richard the Lion Hearted, a monk of the most humble sort, born in 1157 in St. Albans, and buried at Worcester in 1217. He was a great traveler as well as student. Part of his education was obtained in Paris, and part in Salerno and Montpellier and among the Arabs; but on his return to England he gave few hints that his travels had developed any original viewpoints. He wrote a series of questions to relieve his mind of the doubts which were troubling him. Here are samples of his worries: "When a cock becomes old does it lay an egg to be hatched into a basilisk by a toad?"—"Does a cock crow in the early dawn to relieve its head of congestion and itching?" But these are no worse than the questions of Adelard of Bath, a great mathematician and traveler of the period, among which was: "Why have men no horns?" This question he answered Socratically: "Because men have brains to prevent their fighting, instead of horns with which to fight." Another question was: "Why can not human babies walk the day they are born, and why should they have to be fed on milk?" To this Adelard could find no answer. This sort of stuff is a fair sample of the

¹ Alexander of Neckham was a timid and peaceful monk of Cirencester who referred to Aristotle as his master, and to himself as a fly walking up the revolving wheel of a mill without in any way changing the power of the wheel.

pseudo-science of the time. Even John of Salisbury (1115-1180),¹ Bishop of Chartres and friend of St. Thomas à Becket, asked childish questions, and believed in the significance of dreams, and in curing diseases by prayer and relics, although he admitted that the prayer might be more efficacious if accompanied by certain herbs.²

Among the Frenchmen whom Hildegard may have known personally was Odo of Meudon³, who wrote a famous long poem on herbs, the "*Macer Floridus*," in 2269 hexameters and 77 chapters, describing the virtues of 77 plants. This work was based on the older Latin poet, Aemilius Macer. She may have known Bernard of Provins, which was in those days a thriving town about fifty miles southeast of Paris. He wrote a commentary on the "Tables" of Salerno in which he mentioned Trotula's work, and also a book on drugs in which he wisely omitted many of those often recommended but difficult to obtain. He also wrote a commentary on the "*Practica*" of Bartholomew, which was translated into Hebrew as well as into German.⁴

Another noted French contemporary of Hildegard was the notable Gilles (or Aegidius) or Corbeil (Latinized as Petrus Corboliensis) (1140-1224), credited with being the originator of the well-known saying that a student of medicine in his time must study at Salerno, but for law he should go to Bologna, for sciences and arts to Paris, and to Lyons for grammar and dialectics, showing us what wanderers his contemporaries must have been. Aegidius was physician to Philip Augustus of France, and a friend of medical women, who, he said, were skilled in the diseases of children.⁵ His writings kept the school of Salerno before the public for centuries, although he felt that in the early thirteenth century the school was not as great as it had been formerly. Being a poet, he put his regrets into verse:

How deep thou hast sunk from the heights of thy glory,
O Salerno,
For how canst thou tolerate that from thy nurture there arise
so many unripe plantlets, unworthy sons of the
healing art?

He concludes that "they" should not "be allowed to ascend the doctor's cathedra with pompous step."¹ Gilles' popularity as a writer of text-

¹ John of Salisbury believed that since Joseph and Daniel interpreted dreams so the Lord might grant others to do the same. In his day magic, mathematics, and devils often were confounded or used to mean the same thing.

² Thorndike, Lynn, "Magic and Experimental Science," vol. II, p. 158.

³ Neuburger, vol. II, p. 39.

⁴ Gonzaga, Francesco, "*Hist. Seraph. VI. Ughellus Ital.*" Sac. V, II, pp. 172-184. Also De Renzi, "*Collect. Salernitana*," 1859, vol. V, pp. 269, 328.

⁵ Schultz, op. cit., vol. I, p. 203.

books for students—for they were best sellers—was due to their poetic form and their brevity, both of which made their materials easy to memorize. Among them was a poem on the urine, one on the pulse, and one on the general diagnostic appearance of the patient.

The Italian, Arabic and Jewish physicians of the period remain to be mentioned briefly. Among the Italians the most noted was Gerard of Cremona (1114-1187). He lived for fifty years in Toledo, Spain, while preparing his books. Sarton calls him "perhaps the greatest of all the translators." Seventy-one works are credited to him and his school, including all subjects from mathematics to medicines and music. He translated the old work of Rhazes, adding new chapters on obstetrics.

It was Arabs and Jews, especially those who lived in Spain and northern Africa, who did most of what original medical work was done in the twelfth century. Christian belief in the curative power of the relics of saints was an effective stop to scientific investigation. A traveler visiting today the cities of Spain which had large Muslim and Jewish populations in the Middle Ages finds, alas, scant evidence of their former sanitary science. In the open market places of Morocco native doctors still treat their patients with remedies of the time of Maimonides and Avenzoar, and we realize how changed their life has been since the twelfth century. In Sale and Rabat on the coast are the ruins of the old hospitals and schools of the time of Albucasis together with a medical school which once boasted to be as good as that in Cairo.

Among the Mohammedans, and the famous Jewish, Persian, Spaniard and Syrian writers who wrote in Arabic, was Avenzoar of Cordova, the member of a distinguished Muslim medical family. He had courage, says Garrison, even to tilt against Galenism. His books, like those of Hildegard, included such subjects as the soul and its future, the hygiene of the body and the cure of its diseases. Of him and his family, however, we have already spoken. Avenzoar died in Cordova in 1169, but he had a great disciple Averrhoes, who lived until 1198, an exile in Marrakech. Osler puts Averrhoes into his list of *Prima* writers, because of his medical skill and the influence his philosophical insight had on European thought. He was exiled for his heresies, one of which was an attempt to correlate the Christian religion with the science of medicine. The descendant of a long line of judges, he always tried to make his philosophic writing so simple that a child could understand it. He said once that he spent only two nights in his life without working, the night philosophic writing so simple that a child could understand it. He said

¹ Quoted by C. D. Spivak from A. Caravita, "*I Codici e le Arti a Monte Cassino*," 1869-1870.

once that he spent only two nights in his life without working, the night of his marriage and the night his father died. Dante found Averrhoes in Purgatory because of his Commentary on Aristotle,¹ and Ernest Renan wrote a large book to reconcile his philosophy with modern thought.

To Albucasis, who died in 1122, we can give only a few words, although to him we owe the information that women were surgeons, as well as mid-wives, in the countries around the Mediterranean. He also said that no man should attempt to operate on any woman for stone in the bladder, for that was distinctly the work of women surgeons.

One of the greatest medical writers of the twelfth century was Moses Maimonides, a Jew of Cordova. He was born in 1135, studied religion, philosophy and the humanities there, then went to Fez for further study, was persecuted for heresies, and driven to Cairo where he obtained his medical education. He is said to have been the greatest Jewish medical writer of all time. While in Cairo, as physician to the Sultan, he became so popular that, whenever he appeared on the streets, he was followed by a throng of the lame, the halt and the blind imploring his help. Richard the Lion Hearted urged him to go with him to England as his body physician, but he refused. He was beloved alike by Christians, Jews and Muslims, and for centuries there was a saying "From Moses to Moses there arose not one like Moses." Hildegard has been classed with him as a writer.

Maimonides wrote on many medical topics; hemorrhoids, poisons, sex problems, quoting from the "Aphorisms" of Hippocrates as well as inventing aphorisms of his own, and upholding the medicine of Galen, the Salernitan regimen of health, etc. His greatest work, however, was the reconciliation of the works of Aristotle with the Jewish faith, as Averrhoes had attempted to reconcile them for the Muslims. One of the few references he made to the practice of medicine by women was that they were guilty of using magic in curing patients, adding that judges were more lenient with women magicians than with men. Yet even Maimonides believed in hanging the root of a peony on the neck of an epileptic, and in using the dung of a dog for sore eyes and inflamed throat, and a bezoar stone for pain in the gall bladder. In other words, he was a child of the twelfth century. He remarked, however, that the study of books alone could not make a man wise, "for fools write books, and what a man learns through his own senses or from the great philosophers and sages—that alone makes a man wise." He abhorred the mean, the false and the impure, urging toleration in all things.

¹ "*Averrois che'l gran comento feo.*" Inferno IV, 144.

Chapter V

The Thirteenth Century

Thundering and bursting
In torrents and waves—
Caroling and shouting
Over tombs and graves;
See! on the cumber'd plain
Clearing a stage,
Scattering the past about,
Comes the new age.

—Matthew Arnold, *Bacchanalia*.

Res ardua vetustis novitatem dare, novis auctoritatem, obsoletis nitorem, obscuris lucem, fastiditis gratiam, dubiis fidem, omnibus vero naturam, et naturae suae omnia.—Pliny.

I. SOCIAL LIFE IN THE 13TH CENTURY

WE may not believe that the thirteenth century came in with the shouting heard by Matthew Arnold, or that its hundred years produced greater medical men and women than any of its predecessors; but without doubt it established the foundations of modern education in medicine, science, and drama; it increased commerce and wealth and high adventure in foreign lands; and also it introduced a new style of art and architecture more beautiful than any since the golden age of Greece.

The century was responsible for four new Crusades, however, and, along with constant warfare, there were terrible epidemics of the plague, malaria, the dancing mania, and the sweating sickness. Scurvy was endemic in 1250, along with dysentery, tuberculosis, gangrene from ergot and wounds, erysipelas and tetanus from germs and dirt. These conditions must have helped to thrust new burdens on women and offered opportunities for medical service to those who were prepared and willing to undertake them.

It is true that we find few names of superior medical women in the thirteenth century. There was no teacher so important as Trotula, no medical writer so well known as Hildegard. Yet, as we recall the old

saying, "An era without annals is happy," we might infer that the routine work of medical women was unrecorded because it was too evident and commonplace to need recording. Certainly in a century when pestilence and famine raged as they did, women had plenty of opportunity for all kinds of medical work. We can not wonder that they had little desire for a university education if the outcome of a university education was an Albertus Magnus, or a Michael Scot.

Along with its superstition and pestilences, however, the thirteenth century was decidedly picturesque and lively. Davis¹ says that the tumultuous revels of former times became ordered pageants, the disconnected lays of minstrels were welded into romances, acts of forbearance and courtesy which had been the fruit of generous impulse were developed into a code of chivalry. The Crusaders started off with zeal to honor the Virgin and gain absolution for their souls; but eyes of the pilgrims were opened to new understandings of the world, and the stories of those who returned were an education to those left behind. The imagination of painters ran riot in pictures of Hell and the torments of the damned; but, nevertheless, along with all the crudities and absurdities, there was also a marked spiritual and artistic advance. To this the soaring arches of the Gothic cathedrals, and the pictures in glass and stone and mosaic which decorate them, bear witness.

It was chiefly in Italy, and the west of Europe, that the conception of art and architecture took a new turn; and there resulted the paintings of Cimabue and Giotto, the pulpits of Niccolo Pisano, the elaborate bronze doors of many cathedrals, and the building of magnificent towers like that of Giotto at Florence, rivaling or surpassing those of the Saracens in Spain and North Africa.² Music also was being de-

¹ Davis, H. V. C., "England under the Normans and Angevins," 1905, p. 505. Walsh, J. J., "The Thirteenth, Greatest of Centuries," 1909.

² The so-called Gothic architecture was one of the main achievements of the thirteenth century. Starting in the twelfth century the builders of great cathedrals employed as workmen those who had artistic talents in sculpture and carving and glass making. The low, round arch, instead of being pinched at its base like the arch of the Moors, became elongated and pointed and was used distinctly as part of the construction of the walls and the support of tower and roof. Each country developed this principle according to its own artistic feeling; and thus we have, as examples of this period, parts of the cathedrals of Amiens and Chartres in France, Burgos and Leon in Spain, Erfurt in Germany, and the choirs and porches of many English cathedrals, while the beautiful cathedral of Salisbury was entirely built within the hundred years, 1220-1258. When one asks the names of the architects and sculptors, the designers of capitals or the glass-makers, one is frequently told only the name of the bishop or other prelate under whose administration the structure was built, just as in medicine the work was the thing, its practitioner being nameless, unless he was a teacher or writer.

veloped along new methods, and the century gave us such popular songs as the old English melody, *Sumer is ycumen in*, *Sing Cuckoo*, and Friar Paul's decidedly worldly refrain:

Ave! color vini clari,
Dulcis potus, non amari,
Tua nos inebriari
Digneris potentia!

It has been said that crusading ceased because the minds of travelers were directed into other channels than religion. Emerton¹ suggests that, basically, the Crusades were an attempt to substitute nationalism for feudalism. If so, it was the French alone who profited. They extended their boundaries far to the East, while their language became almost universal. Green says that the awakened national consciousness which developed in each country was the result of a defensive *ego* on the part of its citizens as they mingled with the citizens of another country.

Whatever the spiritual effects of the Crusades, the fact is that the French in particular did gain a great deal of territory while the English gained in Wales and Scotland almost as much territory as they had lost in France. The wars between King John and the barons in the early years of the century resulted in the winning of greater freedom for the people by the signing of the Magna Charta in 1215.²

¹ Emerton, Ephraim, "Mediaeval Europe," 1896, pp. 385-386.

² A few dates may give us a glimpse of Europe in the thirteenth century. The fourth Crusade began in 1202, the fifth in 1217, the sixth in 1228, the seventh and eighth, under Saint Louis, in 1248 and 1270, when the king himself died at Tunis. There were also two other abortive Crusades, that of the children in 1212, and that of the farmers in the middle of the century. The children were led by a fanatical shepherd boy of France and a lad from Germany. Swarms of boys and girls got as far as Marseilles or Brindisi, only to be sold into slavery, or to die of hunger and disease. It is said that when these children left their homes their mothers sobbed "from excess of joy," and that the older Crusaders on the march "extended their arms, dropping with blood, to the Almighty for praise and reward." These incidents show us the psychology and temper of the times.

Just a glance at other notable dates and facts. Genghis Khan founded the Mogul Empire in 1206. Constantinople was conquered by the Roman Emperor in 1204, and by the Greeks in 1261. The Mohammedans won a great victory in India and "took" Delhi in 1206. Jerusalem was won back by the Mohammedans in 1291, thus ending the Crusades. In 1290 the Republics of Genoa, Pisa, and Venice were at their height, and sea battles were common between their fleets.

The rulers of France were Louis IX, his mother Blanche being Regent, then Philip III and Philip IV. In England King John died in 1216, and he was followed by Henry III and Edward I. In Germany, after the deposition of Frederick II in 1245, there was a succession of incompetent and obstreperous kings constantly quarreling with the popes, among whom the most pacific as well as scientific was the Spaniard, Pope John XXI, who established the first Board of Health on record, and enforced quarantine at the ports of the Mediterranean.

It is obvious from these things that the men and women of the thirteenth century were getting ready for a new kind of education. Monks and nuns were giving their imagination free play in the miniatures sketched into the initials of the manuscripts they were copying, and painters like Giotto and Cimabue were evolving life-like portraits of saints and warriors from the old Byzantine types of big-eyed madonnas and stiff doll-like babies. In medical education there was but little advance. Hair-splitting religious controversies were still taking the place of experimental science; and for the university medical student there was no teacher like Galen, no therapist like Dioscorides. While the Crusaders were destroying heretics by the thousand it did not seem necessary to save the bodies even of Christians by attention to their diseases.

Nevertheless, there were symptoms of a new stirring among the thinking people of every country. Many a man set out from his home with merely a longing for high adventure, or a desire to gain by trade, rather than to effect the extermination of heretics. In 1245 Friar John was sent on a friendly mission to the court of the Tartars. He traveled on horseback across what is now Russia to the court of the Grand Khan of Mongolia, three thousand miles in one hundred days, with a small retinue. In 1270 Marco Polo also reached Peking by the overland route, returning by sea with marvelous tales which for hundreds of years tempted other travelers to journey. The great Genghis Khan (1162-1227) had obtained control of Asia from the Caspian to the Pacific, while his successor, Kublai Khan (1216-1294) added enormous territories to those which he had inherited and pushed his armies into Europe even to the Danube.

In the thirteenth century polygamy, or at least concubinage, was not uncommon, especially among the nobility. The dual code of morals, under which a man might have several mistresses, but each woman must devote herself entirely to one man, was in full force. But an old poem, written in 1285 by Gilles li Muisis,¹ a churchman, shows that many women were far from true to this standard. He says they were too fond of their clothes, fond of men in general, were gossips and

¹ Gilles also hurls diatribes against the begging students at the schools and against those who studied medicine for the sake of the money to be gained from their practice.

*"Si on li promet argent, il vous visitera.
A l'apotecarie connoistre vous fera;
Par son valet boistes assés envoiera.
Si bien ne li payes, de tout il ciessera."*

thoroughly vain, and by their sins caused the plague. "In the good old days," says he, "girls had three dresses and simple, strong shoes. They obeyed their parents, sewed their clothes on in the morning, and ripped them off at night. Their caps were modest, but now they wear horns as high as stags. They have little dogs and rabbits for pets, and when the clergy reprove them they say haughtily, 'Attend to the men and we will attend to ourselves'."

Earlier in the century the women wore their robes belted in at the waist, long, loose sleeves, and tight caps with or without a veil; and they were publicly punished by the church if their veils were too long, or their breasts not sufficiently covered. The Lord of Coucy tells us that the French women spent too much time over their toilet, combing and powdering their hair, looking in their mirrors, and pulling on their long stockings; but, he adds, the men also were very vain. They, too, wore bright garments, somewhat shorter than the robes of the women; and they "showed a little of their legs." They wore as much jewelry as the women; and their outside cloaks were like those of the women, often made of velvet, and trimmed with ermine. In the houses carpets were still unknown, not being introduced until the time of Eleanor of Castile, the bride of Edward I of England; and the walls, as in the earlier centuries, were hung with tapestries to keep out the draughts.

The homes of the poor people were little changed from those of the preceding centuries. They were still unsanitary and dreary, dark from lack of window glass, and with neither private bedrooms nor latrines. The clothing of the poor was of the coarsest. The men wore short trousers under a short tunic. Shoes, if worn at all, were home-made, and but little fitted to the shape of the foot, although among the wealthy there was a certain fashion in shoes, and sometimes elaborate ornamentation was used on them. On the whole, however, though often picturesque and elaborate, the clothing of the men and women of the century could not have been very comfortable.

Conditions in the monasteries and abbeys of the period tell a significant story. We find the monks of Saint Albans, who for two hundred years had been considered among the holiest in Europe, demanding indulgences from fasting, and asking for extra wine and more food. One old monk of St. Albans, on the other hand, lamented the growing degeneracy of the brethren to such an extent as to dream of the punishments to be meted out to them in Purgatory; and he wrote down these dreams for his companions to read. As for the nuns, it was necessary to make new rules for their conduct, and to invent drastic punishments for their misdeeds. "The Ancren Riwe," or Rules for anchoresses, is a set of

admonitions written in the thirteenth century, possibly for the little group at Tarrant-Keynes in Dorset, England, although this has been contradicted. It is in the form of a letter covering two hundred pages in which women are cautioned particularly to guard their speech, for "if Eve had not spoken to the serpent she would never have been tempted by the apple."

Most of the poems and tales of the Troubadours and Minnesingers, however, were based on idealizations of women. The books owned by the women themselves, however—and, of course only the rich could own books at all—were chiefly prayer books, and collections of receipts for foods and medicines. There were many beautifully illuminated manuscripts of this sort, with such titles as: "The Ladies' Mirror," "The Mirror of the Soul," "The Queen's Closet," and "Mirror of Health."¹

Among these books written for women was one prepared by the king, Louis IX, for his daughter Isabella, the Queen of Navarre (1241-1271), in which obedience to parents and husbands was the keynote. In 1259 he published an order to all the great corporations to the effect that they should treat women during gestation "*avec tres grande douceur et avec calme.*" This has quite a modern ring. At the same time Francesco de Barberino (1264-1308), the probable author of a book called "*Del Reggimento e Costumi di Donne,*" tried to regulate the whole life of women from the cradle to the grave, including a discussion of the occupations in which they should be interested, among the most important of which he listed the practice of medicine and the care of children, and "not omitting a study of astrology so as to control the sex of their infants." But the instability of women's position in this century favored neither their medical education, nor their freedom to practice medicine.²

¹ Hentsch, Alice A., "*De la Littérature didactique de Moyen Age,*" tells us that, in a book called "The Key of Love," marriage is considered a prison; but that if a woman puts herself into this prison, she must be careful to please her husband by attention to her toilet, and be always pleasant and smiling when in his presence. Her teeth must be white, her hands shapely, her shoes clean, and she must be silent at table, eat quietly and neatly, go daily to confession, and say her prayers often.

² The Councils of Montpellier, 1162, of Tours, 1163, of Paris, 1212, and of the Lateran, 1215, all prohibited monks and priests from practicing surgery. They must not mix the sacred and the profane, and especially must they not shed blood. Christians treated by Jews were to be excommunicated. A lay doctor must go to confession when he had a very sick patient. At the Council of Le Mans still further restrictions were placed upon the practice of the clergy, who were absolutely prohibited from treating women, from accepting fees, and from dabbling in sorcery and magic. This law widened the breach between physicians and surgeons; and caused physicians to look down on surgeons, giving the latter a professional handicap which it took them more than four hundred years to surmount. To this day in England surgeons are called "Mr." rather than "Dr."

II. MEDICAL EDUCATION IN THE 13TH CENTURY

IT is true that disconnected facts such as these we are recording do not constitute a true scientific record; but, just as the geologist tries to reconstruct the life of an epoch by a few fossils in the broken ends of a stratum, so we, from these various isolated bits of record, must try to reconstruct the medical life of the period we are considering. If we know that some women studied medicine we may infer that others did. If, with their study of Galen and Dioscorides and Trotula, there was mixed folk-medicine and superstition and faith-healing, we have no reason for believing that the medical knowledge of the men physicians of the period was any better or any different. There was a leaning toward water-cures by baths and drinks in this century, and a common belief in the benefit of medicated sweatings. Weinhold (p. 159)¹ tells us of an abbess whose feet were frost-bitten. She rubbed them with salt and vinegar, heated tiles and put them into her bed, and then wrapped herself in the skins of animals and proceeded to sweat. In order to keep sweating she drank copious draughts of hot teas flavored with almond juice, pomegranates, and candied violets. The Béguin nurses² in the Netherlands were experts in this form of treatment, and as they made no charge for their services, they became very popular, often replacing men physicians who merely glanced at the urine, felt the pulse of the patient, prescribed some remedy to be compounded by the pharmacist, and charged a goodly sum.³ This proves, as Chief Justice Hughes has said, that men, like ships, should be reck-

¹ Weinhold, Karl, "*Die Deutschen Frauen in dem Mittelalter*," 3rd edition, 1897, vol. I, pp. 156-160.

² The Béguines of Flanders founded their nursing associations in 1234. They formed free communities and lived in their own houses, made lace to sell, cooked their food, tended the sick, and were allowed to marry and leave the Order. There are many such colonies in Holland and Belgium today. These women dress simply as in the thirteenth century, but at present they are not as well educated as the graduates of the universities, nor as skilled as independent physicians.

³ Withington tells us that Archimathaëus, himself a Salernitan physician, in the early years of the twelfth century, wrote a code of ethics for physicians very much like that of Trotula, a hundred years earlier. He says that the doctor should commend himself to God before seeing the patient, and from the messenger he should have obtained all the information possible about the sickness in order to impress the family with his own insight. He should praise the house and family, look grave when he first sees the patient, study his pulse and urine and mental condition, then become optimistic and cheerful, but very guarded in his prognosis to the family, and very sure to collect his fee—although not seeming to be in haste.

oned by their displacement, and therefore the medical women with their somewhat superficial knowledge of medicine but with their natural intuition and powers of observation could and did displace men trained in universities, and forced them into shallow waters where, in silence and comparative ease, they might have time to write books, or to study.

The fact that many of the great universities were in process of formation in the twelfth century has already been spoken of. The term "university" meant, however, it must be remembered, not so much a building, or group of buildings, or a definite corporative organization, as simply a group of people united for the purpose of study. The students grouped themselves according to their nationality and language, although Latin was still the language of scholars. Many of the students begged their living from door to door; and, though supposed to be celibates, they undoubtedly spent as much time with wine, women and song as with their studies. The different groups were united under rectors or deans, but all had a voice in important decisions. In the early universities classical literature often outweighed even the study of the Bible in importance. Vergil was as precious to Dante as the Hebrew prophets; and it is said that the emperor Frederick II, through his study of Aristotle, became almost an infidel at heart. What wonder, therefore, that the great translators of Aristotle, like Roger Bacon, were persecuted by the Church for heresies? Adamson¹ says: "The strength of the universities rested on their unity of belief, but this was also their weakness, since it exaggerated the claim of authority, particularly that of the written word, and tended to continue a fixed routine which was actual for centuries."² As for the numbers of students in the universities authorities differ, but they vary from a reputed 6000 in Paris to 10,000 in Bologna—probably both estimates are exaggerated.

As a rule the medical men of Paris in the thirteenth century were wealthy and influential ecclesiastics. Rashdall (p. 428 et seq.) says that they had studied Galen for five or six years, together with Theophilus (of the seventh century) on the urine, and Isaac the Jew and Nicolas

¹ Crump and Jacobs, *op. cit.*, article by J. W. Adamson, p. 284.

² There were fifteen universities in the thirteenth century, chiefly founded by Franciscans or Dominicans. Garrison (3rd edition, p. 166) tells us that the universities were founded in the following order: Paris in 1110, Bologna 1158, Oxford 1167, Montpellier 1181, Padua 1222, Naples 1224, Cambridge 1209, Salamanca 1243, Lisbon 1287, Coimbra 1288, and others following in the fourteenth century.

of Salerno on drugs. In Cologne a student learned some of the "Aphorisms" of Hippocrates, and was obliged to swear "*quod non sit excommunicatus nec infamis, nec homicida, nec publicus chirurgicus operans cum ferro et igne, nec transgressor statutorum, nec uxoratus.*" He also had to promise not to tend a patient whose bill to another physician had not been paid, nor "*conversetur in practica cum Judcis practicantibus, aut cum illiteratis viris, aut mulieribus practicantibus.*" This last clause is an indirect, but for that reason all the more convincing, proof that the medical profession of the period was by no means limited to men.

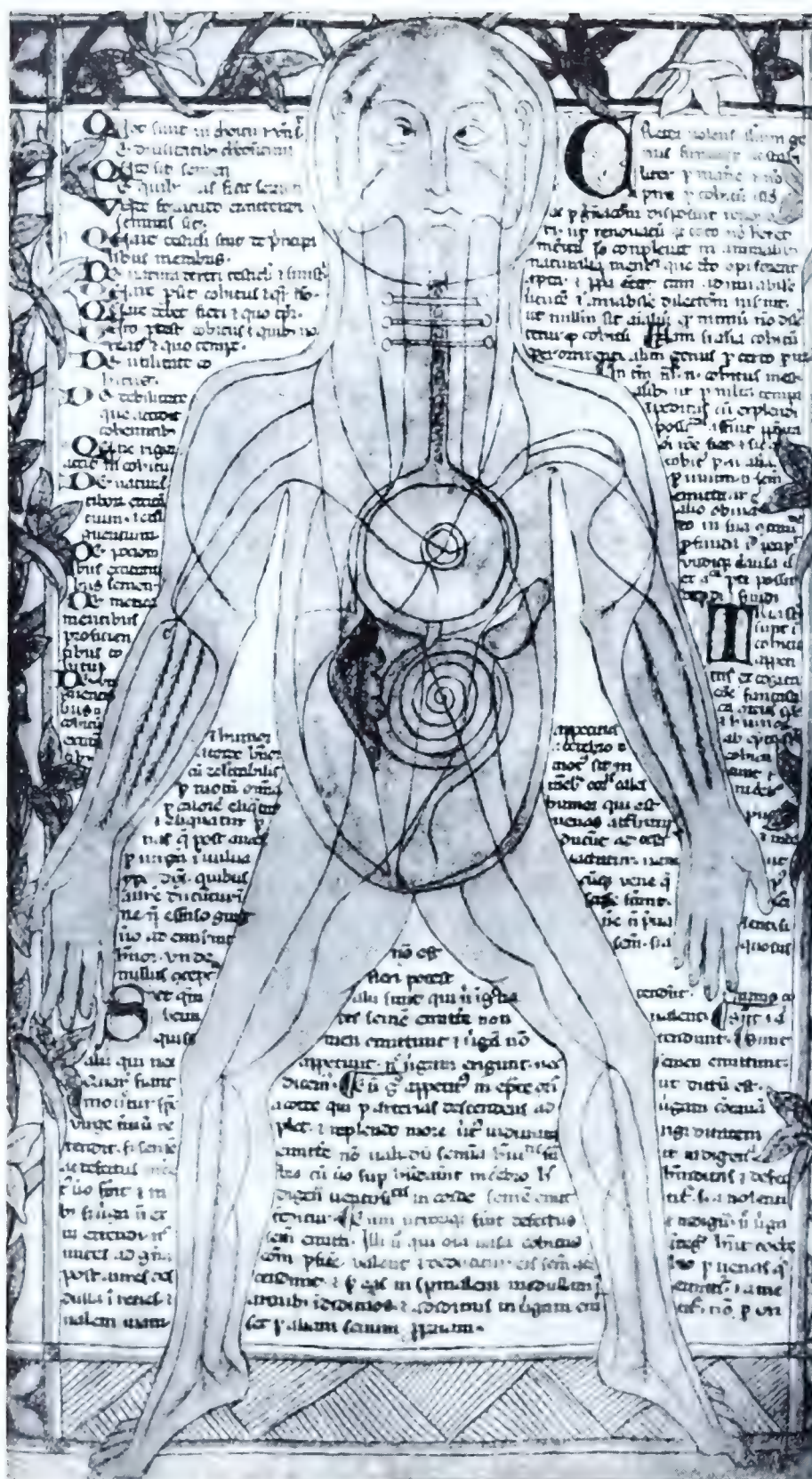
Rashdall tells us that the studies in the medical courses in Italy, in the thirteenth century, were, on the other hand, based on Avicenna and the Arabs.¹ The university of Bologna was crowded and the professors were paid high salaries, but there were also many private medical schools in Italy maintained by the fees of the students. Astrology² was one of the most important subjects taught; for they had a saying that "medicine without astrology is an eye that can not see." Women might matriculate at the Italian universities, since there was no opposition to admission of the laity of either sex; and monks and nuns attended the same classes. Standards were, however, low and instruction ran in narrow grooves. Women in the Italian universities, especially at the old school at Salerno, had to take the same examinations as men, and treat the same diseases, heal wounds and set bones.

In England the universities were tightly closed against women, although the influence of the Crusades was distinctly favorable to their higher education. Teachers who had studied at institutions on the Continent took private pupils, and it was, therefore, no longer necessary to cross the Channel to obtain a medical education.

While it was against the law for anybody to practice medicine in Paris without a license, many men and women were doing medical work who had not studied at the university, or who in any event had not studied long enough to receive the kiss and ring and diploma without

¹ Garrison, Fielding H., *Journal of the A. M. A.*, 1911, Vol. LVI, p. 24, says that in the thousand years of the Middle Ages only four "epoch-making" medical men besides Galen stood out at the end of the period. They were Oribasius (A.D. 326-403), Alexander of Tralles (525-605), Aëtius of Amida, also of the sixth century, and Paul of Aegina (625-690).

² Sarton says that astrology was popular because it seemed rational to connect the periodicity of the tides and of women's menstruation with the course of the heavenly bodies.



THE VENOUS SYSTEM—ANATOMICAL DRAWING OF THE 13TH CENTURY.

(This was the sort of anatomy taught in the monasteries of the period.
 From Ms. Ashmole, 399.)

which they were prohibited from practice.¹ Among the medical women there must have been many midwives, for there were no "men midwives" before the sixteenth century, and then only a few. There were still great abbesses who taught medicine and obstetrics to their nuns, and some of them wrote books.

Salerno still had a great medical school; but it became, in the thirteenth century, a part of the university of Naples. In 1224 Frederick II ordered that a candidate for a license must be at least twenty-one years of age, and must have studied medicine and the arts for seven years. A surgeon was obliged to study one year longer than a physician in order to gain experience.² There was no college of arts at Salerno.

In Montpellier, in southern France, was a medical school which was rapidly rivaling Salerno and Bologna. It gained the favor of the popes to such an extent that it was permitted to grant degrees long before any of the other universities had that privilege. One of its *magisters* was always chosen to be royal physician, with the right to practice "*in urbi*

¹ The *Chart. Univ. Paris*, I, no. 453, in a translation issued by the history department of the University of Pennsylvania (1924-1925), shows us the courses in medicine in 1270-1274, and the form for licensing a bachelor. First the *magister* under whom the student has been taught had to testify to the chancellor, in the presence of the other masters called together for the purpose, as to the suitability of the bachelor. The latter must have studied medicine six years, if not already a graduate in arts. For the medical degree he must have "heard" the "*Ars Medica*" twice—this included Galen, Theophilus and the other usual writers—the "*Viaticum*" twice—the books of Isaac on diets generally twice, the book of antidotes once, and perhaps the book of Gilles de Corbeil, and something on the theory and practice of medicine. All this must be sworn to, and the punishment for perjury was severe.

² From the "Golden Legend" we learn what the course of study for men and women of Salerno was during this century. (See Longfellow's translation.) The students had to study logic for three years,

"For none but a clever dialectitian
Can ever hope to become a great physician."

Then came five years devoted wholly to medicine—

"With lectures on surgical lore,
And dissecting the bodies of swine
As liketh the human form divine."

Their books were—

"Mostly, however, books of our own,
As Gariopontus Passionarius,
And the writings of Mathew Platearius,
And a volume universally known
As the Regimen of the school of Salern,
For Robert of Normandy written in terse
And very elegant Latin verse."

The new doctor promised to visit his patients twice a day, and once at night if they lived in town, to take no pay from the poor, and to use no dishonest drugs. When he received his diploma his head was crowded with laurel; he was kissed on the cheek; a ring was placed on his finger; and he became *Magister Artium et Physicus*.

et orbi." Jews and Arabs, Christians and Mohammedans, men and women from all the adjacent countries, were to be found there as they were formerly found at Salerno.

Matthew Paris, a monk of St. Albans, near London, wrote in this century a history of England, of which the twenty years before his death in 1259 represented a recording of actual facts. He knew of only five physicians in all London. "Possibly," said he, "there might have been seven." They were probably all ecclesiastics.¹ Even then London was a large city. In 1272 there were said to be "six serious physicians" in Paris, which then had between 150,000 and 200,000 inhabitants; but this evidently means six registered, or licensed, masters of medicine. The vows of celibacy were unpopular, and men preferred to practice without a license rather than to take vows. One result was that quacks and herb doctors were more numerous than ever before, along with women doctors and midwives, none of whom wore the characteristic gown and hood of the registered profession. In the tax lists of the property owners of 1292 in Paris are the names and addresses of eight licensed "*mirgesses*," who were also called "*miresses*" and "*médeciennesses*."² All of these were women doctors in a general sense, more learned than the "*ventrières*" or midwives, and evidently more wealthy. They were authorized to testify in medico-legal cases, to perform surgical operations, to bleed, etc.³ These medical women must have studied in Italy or Montpellier, or with private masters; and we may suppose that they became teachers of other women. One of the documents found in Marseilles has a reference to such a "*médecienne*," Sara de St. Gilles, wife of a certain Abraham of Montpellier, as taking women "apprentices." Gauthier de Coinsi speaks of her in the following lines:

*Tout le monde fait esmerveillier,
En Salerne, n'a Monspeller
N'a si bonne fisicienne
Tant soit bonne médecienne
Tous ceux saines cui tu atouches.*

Lipinska tells us that during the reign of Philippe le Bel, a law was passed that certain private schools of medicine should accept young girls as students, and teach them several languages as well as medicine and surgery, in order that they might go to the Orient as missionaries, marry and convert native men, and heal the sick. This law must have been

¹ Moore, Norman, "History of the Study of Medicine in the British Isles," 1918.

² Franklin, Alfred, "*La Vie Privée d'Autrefois*," 1892, vol. III, *Les Médecins*, p. 5.

³ Lipinska, op. cit. pp. 117-120.

little regarded, for we find nothing more about its results, but it shows us that for women doctors celibacy was not deemed necessary.

It is said¹ that Paris had a population of 215,861 inhabitants in 1292. No count has been found of the actual number of physicians in this population, except a record of 38 practitioners, men and women, most of whom, as we have seen, were probably practicing without any license. Among the thirty men, however, were several who were called "Master"; and it is interesting to note that, among the eight women, there seems to have been one Jewess. The women were all called "*mirgresses*." Judging from the high taxes they paid, they must have had good incomes. One of the men doctors is recording as having received an annual income of what would be thirty thousand gold francs at present.

The list of these women is as follows:

Isabiau, in the parish of Ste. Opportune.

Haoy, in the village of St. Lorenz.

Richeut, near the cemetery of St. John.

Ysabel, rue de Frépillon.

Dame Heloys, rue des Gardins.

Phelippe, rue Gervese-Lohareuc.

Dame Marie, rue de Lourcinnes.

Sarre, a Jewess, at the Tacherie.

Géraud² also says that Sarre, this Jewess, had a daughter, also a medical woman, who practiced in Paris a little later; and that there was a physician named Jehannette, daughter of "le mire Jehan," who may also have been a Jew. These names were found by chance in a sort of directory of Paris dated 1292.

One of the statutes of the University of Paris a little later contains the following clause: "No surgeon or apothecary, *man or woman*, shall undertake work for which he or she has not been licensed, or 'approved'." (*Edicto praesenti statuimus uti in villa nullus chirurgicus nullave chirurgica prius examinati fuerint diligenter et approbati in ipsa arte ac ab ipsis, etc.*)³ From this it is probably permissible to assume that, besides the few women licensed to practice, there were an indefinite number of others practicing without a license, liable to fines if complaint was made

¹ Franklin, op. cit.

² Géraud, H., "*Paris sous Philippe le Bel*," 1837.

³ Quoted by Lipinska, p. 120, from Isambert "*Recueil des anciennes lois françaises*," Edict of 1311, and E. Boileau, "*Le livre des métiers*," titre 96, art. 4, de 1352-1364.



TWO WOMEN SURGEONS EXAMINING A PATIENT'S LIVER
(From a manuscript of the 14th Century)

of their work, but otherwise unmolested. Unfortunately, their work was not always of the best any more than that of the men, for they may have failed to study obstetrics as earnestly as in the eleventh century under Trotula of Salerno. They no longer dared to perform version to save the life of the baby, nor did they try to protect the mother's perineum as their ancestors had been taught. We read of one poor woman who was shaken violently while in labor, her pains having ceased, and subjected to strong external manipulations until the head of the child appeared at the vulva. In case such forcible methods were useless, a screw dilator was applied to the vagina and a fillet or hook applied to the presenting part of the infant in order to remove it piecemeal.

III. THE FRENCH MEDICAL WOMEN OF THE 13TH CENTURY

GUIZOT says that the outstanding figure of this century was Louis IX, king of France. But to his mother, Blanche of Castile (1188-1252), who educated him, Louis confessed his indebtedness for whatever he accomplished during his reign. She taught him how to further Christian charity, to establish a sanitary code for his kingdom, to build hospitals, and to keep peace in the realm. For four years before her death she devoted herself to the work of the nursing sisters of Saint Cosmo.

When Louis IX started for the Holy Land in 1248, he took with him a number of physicians, including one medical woman, Hersende, of the Order of Saint Cosmo, as "*maitresse fisicienne*." When he started for Tunis, however, on the eighth Crusade in July, 1270, he was well provided with physicians, chiefly men. Unfortunately, the voyage was rough and long, the weather hot, and plague raging at Tunis, so that the mortality among his followers was terrific, especially among the doctors and surgeons. Louis himself died of the plague at Carthage about the middle of August, attended only by his mass priest.

The mother-in-law of Louis, Beatrice of Savoy, was as skilled in medicine as his own mother. She ordered Aldobrandino of Siena, her physician (who died in 1287), to write a medical encyclopedia for her to take on her journeys, when with a large retinue she visited her four daughters, the queens of France, Germany, Sicily, and England. This book, taken chiefly from Rhazes, Avicenna and Constantine,¹ was

¹ Sarton, vol. III, p. 1083.

called the "*Régime du Corps*." Haskins (p. 254) says it was translated from Greek into Latin, and from Latin into French, at the request of "Frederick, formerly emperor of Rome" (meaning Frederick II). The book was a compendium especially useful to women, dealing with diets, hygiene, gynecology, and the complexion. There was also a chapter on dissections, which, as we have seen, were rare, being permitted only where necessary to determine post mortem evidence as to the cause of death. Such dissections were prohibited entirely in France in A. D. 1300, as was also the practice of cutting up and boiling the bodies of dead Crusaders in order to carry their bones back to their homes. The Jews abhorred blood, and did not care for dissecting; and the Christians were forbidden to open the human body—the "temple of the Holy Ghost"—a person committing such a deed without a permit being forthwith excommunicated.¹

There were many medical women in France in the thirteenth century other than Sarre, the Jewess of Montpellier and those others already mentioned as licensed to practice in Paris, among them several of aristocratic birth who became historically famous. The Countess of Hainault and Madame de Valois, for example, born to riches and an easy life at court, educated themselves in medicine. They renounced the world and devoted their lives to the care of the sick.

Perhaps the most devoted to medicine among the daughters of Blanche was Marguerite of Bourgogne, queen of Sicily. In 1293² she built a beautiful Gothic hospital at Tonnere, not far from Dijon in the Champagne country. Its wards were two hundred and seventy feet long and well ventilated; each bed was screened and comfortable; the ceilings were groined and high, and the long windows were filled with stained glass to represent Bible scenes. The chapel and library of this hospital are still standing among the ruins of the other buildings.

According to the same plans, at Royaumont, twenty-five miles north of Paris, Blanche herself built a hospital, the charming refectory of which, built for its Cistercian monks, the beautiful Gothic cloisters, the choir and the scattered remains of the abbey church, chapter-house and library still stand. Martindale tells us that this hospital was built by the white robed monks themselves, and that among the laborers was the young king, Louis IX, who carried "his litter filled with stones and lime,

¹ In 1345 Guido of Vigevano made the following statement: "*Quia prohibitum est ab Ecclesia, facere anathomiam in corpore humano...*" Sarton, vol. III, p. 1082.

² Martindale, Louisa, "The Woman Doctor and Her Future," 1922, pp. 32, 69, et seq.

and forming in his rich attire and pointed scarlet cap, a strange contrast to the task engaging him." Curiously enough, it was in this old hospital that the women doctors of Great Britain operated a large modern army hospital during the Great War of 1914-1918. Four wards were arranged in the old building, each holding ninety-six beds, the one in the library of the Cistercian monks being named for Blanche of Castile. The story of this later hospital has been so well told by Dr. Martindale that we need only refer here to her book.

IV. THE 13TH CENTURY—THE REST OF EUROPE

Spain and Portugal

THE sister of Blanche, Urraca, queen of Portugal, was also famous for her hospital work and medical philanthropies; just as still another sister, Berengaria, queen of Castile and mother of Saint Ferdinand of Spain, was for her knowledge of medicine and sanitation, and for her personal devotion to the sick and suffering in her kingdom. That many of her country-women were competent to follow a medical treatise is shown by the brief "Thesaurus" of Peter Hispanensis, which was evidently written for popular practical use.

Elizabeth of Aragon, born in 1271,¹ queen of Portugal after Urraca, founded a hospital at Coimbra near the new university, as well as a home for foundlings of which, it is said, she personally took charge. She died at the age of sixty-five from a "tumor of the arm."

Mention should also be made of Helen of Portugal, who, during famine and plague, lent her castles to the poor and personally cared for the sick.

Bohemia, Silesia and Poland

Queen Hedwig of Polish Silesia was as famous for her medical skill as Blanche, and as well supplied with relatives interested in medicine. Hedwig was mentioned in a previous chapter because she was born in the twelfth century (1174), but her main work in founding hospitals was done in the first half of the thirteenth century. She was the daughter of the powerful count of Meran and Andechs, and the wife of Henry the Bearded, first duke of Silesia, Poland, and Slavic Croatia. They had six children, each of whom lived to grow up and follow their mother in

¹ Kavanagh, Julia, "Women of Christianity," 1853, pp. 105-113.

medical paths.¹ They founded nunneries, hospitals, and homes for lepers, where almost from their babyhood they studied the diseases of the patients. Hedwig had been educated at a convent in Kissingen ruled by her elder sister Mathilde, where the nuns were taught medicine as well as the arts; and, for her own convent at Trebnitz, near Breslau, she selected nuns from Kissingen and from Bamberg where Mathilde had studied. At her direction they wore bluish grey dresses with a black scarf, and discarded the conventional wimples in order to simplify the laundry work. They were especially devoted to the care of lepers, "tending them with great love and helpfulness."

Hedwig died in 1243.² Her son Heinrich married Anna, a princess of Bohemia, who was as well trained, medically, as her mother-in-law. Anna took for her specialty "forlorn children and orphans," and those who had fever.³ In 1253 she founded a nunnery and hospital at Kreutzberg, and another at Neumarkt, both of which are still in existence. Her husband, like many rulers of his century, came to a violent end, his head being impaled on the walls of Breslau. Anna thereafter devoted her entire time to her medical work, in this emulating her sister Agnes, her cousin Elizabeth, and their common friend, Saint Clara.

This Agnes, whose betrothed, the Emperor Frederick II, died before their marriage, lived in the great castle on the hill in Prague near the convent and hospital connected with the cathedral. Every day, it is said, she might have been seen "sweeping and perspiring" in the kitchen, cooking or cleaning like any servant. In little alchemists' laboratories nearby some of the monks were experimenting to make gold or to find the elixir of life. Both she and Anna were friends of St. Francis, and of his devoted sister Saint Clara, of Assisi, and from them they frequently received encouragement in letters, and presents of holy relics.⁴ Eckenstein says, p. 297, that Agnes, daughter and sister of kings as she was, "behaved in this way [that is, as a physician] not only to those who were ill, but to those who were healthy, teaching hygiene and the proper care of babies wherever she found hearers"; and that for those who were ill she "spread soft beds and carefully removed all that could offend eye

¹ "With wonderful tenderness she attended upon those who were afflicted with bodily ills," says Eckenstein, p. 294; quoted from Wolfskron, "*Bilder der Hedwiglegende*," 1846.

² Hedwig was canonized in 1267.

³ Eckenstein, "Woman Under Monasticism," 1896, pp. 295, 296, 297.

⁴ After the death of Saint Clara her drinking cup and plate, prayer-book and veil were sent to Agnes.



SAINT ELIZABETH IN HER DISPENSARY, 13TH CENTURY.

(From a painting by Murillo.)

or nose in order the sooner to heal wounds, cure the sick, and relieve pain." She died in 1282.

It is a sad commentary on human nature to learn that the charitable work of these royal women made their hospitals so popular that many feigned leprosy by scarifying their skin and infecting it, or by irritating chronic ulcers in order to simulate the symptoms of the disease. The example of these self-sacrificing women was contagious. Medical work was taken up by women of all classes with great fervour; and innumerable leper asylums were set up all over the known world.

In Poland¹ the name of a Johanna Medica is preserved because of the charitable medical work that she did. Queen Cunegunde took vows of humility, poverty, and charity; and a certain Salomé, who lived not far from Cracow, "worked day and night for the salvation of souls, and for the healing of bodies." It is probable that there were also many Jewish women practicing medicine and midwifery in Poland at that time.

Hungary

One of the most noted medical women of this century was, however, Saint Elizabeth of Hungary.² She was born in the royal palace of Presburg, not far from Buda, in 1207, the daughter of Andreas II of Hungary and Gertrude, Hedwig's sister. During babyhood it is said that even her touch "healed the blind." At the age of seven, she was taken to the Court of Thuringia to be betrothed to the boy who was to be its king, Louis, son of the Count Palatine of Saxony and Landgrave of Thuringia. Wrapped in silk embroidered with gold and silver, she was laid on a golden bed beside the little Louis, aged eleven. His father was one of the great men of Europe, a nephew of the emperor Frederick Barbarossa; and in his castle on the Wartburg above Eisenach the two children were educated, not only in religion and philosophy but probably also in medicine, since we are told that they learned how to treat "every kind of distress."

When Elizabeth was sixteen years old her first baby was born, and during the following four years three more, each one of whom Elizabeth, barefooted, carried to church in her arms for baptism. After the fourth, Louis started on a crusade to the Holy Land, leaving the young mother

¹ Lipinska, *op. cit.* p. 125.

² Walsh, James J., "The Thirteenth, Greatest of Centuries," 1909, p. 327.
Heusinger, Carl Friederich, "Life of Saint Elizabeth of Hungary," i. e. *Geschichte des Hospitals S. Elisabeths in Marburg*. 1846.

Montalembert, Charles Forbes, Count of, "The Life of Saint Elizabeth," 1904.

to care not only for her family and estates, but also to do medical work in person among all the poorest of her people.

Louis died at Brindisi on his way home in 1227. For a time Elizabeth and her little family were sent to the monastery at Erfurt, where they endured many privations; but they suffered them patiently, and shared with those poorer than themselves what food and warmth they had. Later, however, they were reinstated in the castle at Marburg, where Elizabeth quickly resumed her old work. It is possible to picture her, descending the hill from the castle with her little children, carrying her surgical dressings and medicines, food and flowers, to the sick and needy. Although her life was short, less than twenty-four years, there was something beautiful and unselfish in her character which has made her live in the minds of the people of Europe for six hundred years, the true spirit of the medical missionary. She had many offers of marriage, even one from the emperor Frederick II, but she preferred to live her own life as a widow until her early death in 1230. Even after she was buried in the beautiful Gothic church at Marburg, her body was believed to work miracles.

Painters have always represented Elizabeth as very beautiful, every inch a queen, dressed in long-trained garments of black velvet trimmed with ermine, her head covered with a gold and purple veil; but tradition says that she wore these rich gowns for the sake of the court conventions, and that beneath them she wore a coarse, haircloth shirt.

Germany

In many parts of Germany women were devoting their time, both in the convent¹ and out in the world, to quiet devotions and the care of the sick. Weinhold² says that they knew as much of the *healing art* as the men of the universities, though perhaps not so much of the *science* of medicine. They had been taught folk medicine, the knowledge of herbs and roots—along, it is true, with symbolic remedies, stones, signs, prayers and amulets. Some of their ancestors had been priestesses as well as healers in heathen times, and they had studied the medical works of Saint Hildegard.

¹ The author of the "Holy Maidenhood" in the thirteenth century called the nun the free woman, and contrasted her with the wife, who in his eyes was a slave. (Eckenstein, p. 482.) Later, however, in the sixteenth century, Erasmus said that the women of the convents were slaves as opposed to the free woman of the home, who was then well protected and gently treated.

² Weinhold, Karl, "*Die Deutschen Frauen in dem Mittelalter*," 1882, vol. I, p. 156-160.

Of these women, mention should be made of Mechthild of Hackeborn and Magdeburg,¹ a woman of the nobility, born in 1212, and educated in the nunnery of Helfta. She was one of the uncloistered nuns, like the Béguines, devoting her life to teaching and visiting patients, and her nights to writing visions in poetic style. She was at once a mystic and a strong-minded and active woman of the world. "Thou shalt keep the sick cleanly and feed them well in order to strengthen them for God's service," she writes, and then she proceeds to put her words into practice, and to prepare an ointment of rose leaves for healing the sores of her patients, and she prescribes sweet smelling flowers to brighten their rooms, and places cooling lotions on their foreheads, but at the same time, curiously enough, she never loses an opportunity to denounce or criticize the clergy. In the course of time she retired to the convent at Einsiedeln to write and copy manuscripts. Her Superior was Gertrude of Helfta (d. 1311) the abbess, who also wrote visions. Mechthild died in 1282; and, according to some authorities, it was she whom Dante saw in Paradise (Canto XXVIII). There was also at least one queen in this century who studied and practiced medicine, Margaret, wife of Conrad IV of the Holy Roman Empire, who, following the teachings of Saint Clara, went about, day and night, to save bodies as well as souls.

England

Unfortunately, we know the names of very few of the medical women of England in the thirteenth century. Mabel Rich,² mother of St. Edmund, archbishop of Canterbury, was often referred to by him in his writings. He said that she devoted her whole life to the poor and the sick. The abbess Euphemia, of the Benedictine nunnery of Wherwell, in Hampshire, "with maternal piety and careful forethought "built for the sick and sound" a large infirmary, where she tended the sick, having, as the chronicler says, "the spirit of a man rather than of a woman." The importance of the medical work done at the nunnery at Sion near London, a house of the order of the Swedish Saint Bridget, has already been mentioned. The Abbess of Shaftesbury, Agnes Ferrar, was summoned to Chester to take part in the war, in 1257. Twenty years later the abbess, Juliana Baucyn, had a similar mission, showing their acknowledged importance to the army in more ways than as nurses. For all the medical men and women of England a whole encyclopedia of medicine was written in this century, the teaching at Oxford and

¹ Eckenstein, p. 328, et. seq.

² Walsh, James J., "The Thirteenth, Greatest of Centuries," 1909, p. 327.

Cambridge being more religious than medical. Edina Rittle, from St. Bartholomew's Hospital, in London, was perhaps the same medical woman who had charge of the great Pantocrator Hospital in Constantinople during the later Crusades.

Scandinavia

Scandinavian women were in the thirteenth century doing much the same kind of medical work as in earlier times. In Scandinavia it was chiefly to women that both men and women turned in sickness, famous healers being brought from afar to treat serious cases. In the classics of the late Middle Ages we still find "wilde wiben" and "fairies" teaching women how to bind up wounds, and where to find roots and herbs for medicine.¹

Despite the coming of Christianity, the deities of the old folk lore were still powerful. Frigg, or Freya, was supposed to preside over childbirth, and had to be invoked constantly and presented with gifts; and the prayers and incantations to her in the "*Eddas*" were commonly used in the lying-in room. The sister of Etzel kneels at Borgny's bed, and chants such hymns. There was always much superstition among the peasants of the Far North. Indeed stories of "*meerwibe*" and gnomes are still told to children.²

Italy

Of the Italian medical women of the thirteenth century, Sarti³ tells us many interesting facts. The wives and daughters of doctors, or other learned men, also studied at the universities and led very independent lives. They were great bibliophiles. We read that Adele, wife of John of Assisi, left fifty books and her reading desk full of copying implements to the "brothers," together with her rugs, silver, and vases, a house in Florence, and three hundred books "made" in Pisa. A certain Beatrice left two hundred and forty books to her husband. There was also a Jacobina Medica, daughter of a certain Bartholomeus, of whom even Guy de Chauliac, in 1304, spoke highly as a surgeon.

But they did more than read books. Walsh,⁴ quoting from "The

¹ Schultz, Alwin, "*Das Höfische Leben zur zeit der Minnesinger*," 1889, vol. I, pp. 200-202.

² This was the century of the Icelandic "*Prosen Edda*," where we find women as surgeons, midwives and physicians.

³ Sarti, Mauro, "*De Claris Archigymnasii Bononiensis Professoribus*," 1888, vol. II, p. 218.

⁴ Walsh, James J., "Medieval Medicine," 1930, p. 164



LECTURE ON ANATOMY BY MUNDINUS.

A woman is prosector, probably Alessandra Giliani.

History of the Anatomy School in Bologna," mentions one Alessandra Giliani as having become "most valuable as a dissector and assistant to Mondino," the anatomist, because she could "cleanse the smallest vein, the arteries, all ramifications of the vessels, without lacerating or dividing them, and prepare them for demonstration. She would fill them with various colored liquids, which, after having been driven into the vessels to their minute branches, colored them so perfectly that added to the wonderful explanations and teachings of the master it brought him great fame and credit." When Alessandra died, "consumed by her labors," a tablet to her memory and skill was placed in the hospital church of Santa Maria de Mereto in Florence. This tablet tells us also that her lover was so grieved at her death that he himself had "a swift and lamentable death." A bas-relief in Bologna, of which there is a copy at the College of Physicians and Surgeons in Philadelphia, shows Mondino seated in a high chair reading. Many of his auditors seem to be women. In another picture (dated 1318) we see a long-haired girl demonstrating the organs of an anatomical subject while Mondino sits in the same high chair above the table apparently explaining the dissection. Perhaps this girl was Alessandra Giliani.

Capparoni¹ mentions Constantia Mammana (d. 1308) as a noted midwife of this period.

Among the teachers at Salerno during this century the names of three women have come down to us, all of them cited as writers of medical treatises. We even know the titles or subject matter of their books, but the books themselves have not survived. Abella, a Roman, wrote "*De Atrabile et de natura seminis humani*"; Mercuriade, a surgeon, wrote on the crisis in fevers, on ointments, and on the cure of wounds; Rebecca, of the Guarna family, probably not a Jewess, wrote of fevers, the urine, the embryo, etc.²

Walsh³ says that, apparently, from the early thirteenth century there were women students at the university of Bologna; and, in fact, that properly prepared women have always been admitted to Italian universities, where also some of them became professors, like Maria di Novella, who was at the head of the department of mathematics at the age of twenty-five. He also says that hospitals operated during this century by the medical women soon replaced those under the care of men, for the former were neat and clean; such women were speedily able

¹ Capparoni, Pietro, "*Magistri Salernitani nondum Cogniti*." 1923.

² Lipínska, p. 99.

³ Walsh, op. cit., p. 330-331.

to reduce the number of cases of skin diseases and of all those diseases whose origins lie in a faulty diet, dirt, and general unsanitary living.

In Venice, at this time, there was a medical woman named Ghilietta Medica, and another named Beatrice, the widow of Gherardo di Candida.¹ Although we have only the names of these women, that alone is a cause for gratitude when so many others have probably been lost.

Jewish Medical Women

There is reason to believe that Jewish women were practicing medicine in all parts of Europe in the thirteenth century. In the Hebrew religion hygiene is of the first importance; and both the Old Testament and the Talmud are full of hygienic regulations. Bayle ("Physicians of the Middle Ages in Avignon") says that, although the Jews were under the ban of the Church and Christians who employed them were to be excommunicated,² nevertheless they were such excellent doctors that most of the nobility and royalty, and indeed several prelates of the Church, did employ Jewish physicians; as did also many of the Mohammedan rulers.

Isaac Israeli, a learned Jew of the ninth century, had been physician to two Caliphs; and, in every subsequent century for five hundred years, Mohammedan rulers, even the great Saladin, employed Jews as physicians rather than Arabs. Isaac's book on fevers was translated into Latin, French, and Hebrew, and used at the University of Paris after 1270 as a text-book. As Hebrew women had always shared in the medical work of their race, and had done all of the midwifery, there is reason to believe they continued to do so. According to Beaugrand, there were in southern France during this century many Jewish medical women from Spain, educated probably at Salerno. Although they were unmercifully hunted as heretics, they were nevertheless loath to pretend to be Christians.

Mention should be made here of one man-midwife of this century, perhaps because he was exceptional, like a certain man teacher of obstetrics in Cairo before the year 1000. This thirteenth century obstetrician was Abulpharagus (1226-1286), a Jew, otherwise called Farag,

¹ Burckhardt, "*Die Cultur der Renaissance in Italien*," 1869, vol. I, p. 363.

² In 1246 at the Church Council at Beziers in France, Christians were again prohibited from employing Jewish physicians. The brother of Louis IX of France, however, sent for Abraham of Aragon to treat him for eye trouble.



PATIENTS IN A HOSPITAL, 13TH CENTURY, ATTENDED BY
WOMEN PHYSICIANS.

(From a contemporary manuscript.)

or Farraguth, or Farradj ben Selim, or Moses Farachi, a Salernitan employed at the court of Charles of Anjou in 1282, who lived part of the time in Girgenti, Sicily, and in Malta. He wrote a book on gynecology and obstetrics, in the main translated from Rhazes, ostensibly for the midwives of his day, in which he claimed to have had great experience. There are records which seem to show that the first Caesarian section of the Middle Ages was performed by a Jewish surgeon one hundred years before Farraguth; but this honor has been claimed by many.

V. 13TH CENTURY MEDICAL WOMEN IN TALES AND SONGS

HISTORIANS find, in the lays of the troubadours and the songs of the minnesingers, most valuable information concerning the daily life of the men and women of the period. As in the twelfth century, so in the thirteenth, such romances were popular everywhere; and there was no difficulty in gathering an audience either in the castle or in the market places to listen to their recital—deeds of heroism and miraculous escapes from death, accident, war, and disease. In most of these stories, whether they were from the far away countries to the south or east, or from the north, Germany and Scandinavia, the heroines were not only beautiful but brave.

The significant thing for us in these old romances is that we find among them many who seemed to be able, in a way that their auditors evidently took as a matter of course, to perform daring operations, heal infected wounds, prepare sleeping potions, and administer antidotes to poisons. The ladies of the times, it seems, were always equipped with all necessary first-aid remedies, always able to "physick and patch up their knights"; and the audiences to whom the troubadours sang were apparently ready to believe the most incredible stories of their medical prowess.

Examples of this sort of incident are innumerable. The wife of the injured merchant is fortunately at hand to undress her husband, bathe him in medicated water and give him a sleeping potion. The daughter of Guyon-le-Gris, in the "*Roman de la Violette*," revives Gérard by baths and hot drinks. Melisande cured her father, the king, of a great melancholy by the same means; and Parthenope could heal the mind as well as the heart, for she had studied the arts, and after-

wards medicine, "*Après apris tote médecine, Quan qu'est en erbe et en racine.*"

In the Charlemagne Romances, the "*Chansons de geste*," Saracenic women like Guaite, Alfamie, Belamer and others seemed always providentially on the spot to remove the armor of a wounded knight, and treat him by surgery, medicine, or baths. To set bones or bandage an arm or a leg was routine work for such heroines as Floripas, Nicolette, Rosamonde and Clarisse; Helen of Troy, Odelis, Ysolt and her mother had remedies on hand, it appeared, for every sort of pain and fever. The daughter of Lyeurgus, "*savoit molt de médecine*"; the daughter of the Lord of Orleans knew all that was necessary of surgery and bandaging; and the sister of Aslardin "*en aus gari tant entendi*"; while a woman of the "*Fabliaux*" although admitting "*Ne sui phisicienne ne prestre*," adds that she is able to cure all diseases.

There are in these tales frequent references to Salerno and Montpellier as the places where women were taught all medical subjects. A certain king's daughter is said to have a relative, who had practiced in Salerno for more than thirty years, and "knew the art of physie and of herbs" because "*l'art de phisike a tant use Que mult est saine de médecines.*" Rutebeuf (1245-1285), a trouvère of the thirteenth century who wrote a metrical life of Saint Elizabeth, also wrote a popular tale called the "*Dit de l'herborie*," a dramatic monologue supposed to be spoken by a quack doctor, which mentions Trotula of Salerno as though she were still practicing at the time. He calls her "*Madame Trote de Salerne . . . c'est la plus sage dame qui soit enz quatre parties dou monde.*" He is fond of making puns on the name of this "wisest woman in all four corners of the world," and on that of Hippocrates, which in fact had lent itself to a famous medicinal wine, "hippocras," much liked by patients.

In the "*Lais*" of Marie de France, a woman removes the arrow from the thigh of Guigemar, and dresses his wound with "*un bel drap de chesnil blanc.*" In Godefroi de Strasbourg's tale of Tristan, Morold is told that Isolde is the only person who can heal Tristan's wounds; and, after the fight with the dragon, she and her mother remove his armor, examine his body carefully, and revive him with theriac, in fear lest he had been poisoned. When Riwalin, one of Tristan's knights, is wounded in battle, it is Blanchefleur, disguised as a woman doctor, who heals him. When Regnault de Corne's nephew needs to be bled, it is his

daughter Bertha who is sent for to perform the operation. But, before beginning the process, he insists that she reread carefully all the directions for it from Hippocrates!

In the "Romance of Perceval" there is mention of a great physician who takes three young women as pupils on a long journey. While at the court of King Arthur Perceval wounds the arms of the bailiff, and this great physician, and his three woman assistants, are sent for to heal him:

*Un mire moult sage
Et trois pucèles de l'escole
Qui le renoent la canole;
Et puis li ont son bras lué
Et rasoldé l'os esnicié.*

Women like this know how to arrange a comfortable litter for a wounded knight, and have him carried home as in an ambulance, either by men or by horses. In some cases they even swing the litter between four horses, and take the patient to an improvised tent, where they make for him a bed of boughs and grass and blankets, and there dress his wounds.

As in France so in Germany. In the tales of the thirteenth century by Wolfram von Eschenbach, Parzifal and Willehalm we find Cundry curing the wounds of Parzifal with various herbs, and putting him to sleep with mandrake. Gyburg heals Willehalm with blue diptam, vinegar and flowers. In the Gudrun Epic, about 1250, we find that "wild women" taught Queen Waté medicine, especially how to use aphrodisiacs, and emmenagogues.¹

In one of the Scandinavian Eddas there is an interesting account of a sort of outdoor clinic at which a medical man named Menglod sits in the midst of nine women pupils, to whom are brought sick women as patients. Weinhold² also quotes a story from the "*Hrothmunda Saga*": Svanhvit's husband is so wounded in the abdomen in battle that his bowels gush out. She is sent for. He has replaced his intestines by the time she arrives. She then sews up the wound and bandages it so well, that he goes back into the fight. In the "*Sturlunga Saga*"³ Ingigerd, the king's daughter, builds a little hospital, in which she and other women prescribe for and nurse patients.

¹ Schelenz, Herman, "*Geschichte der Pharmacie*," 1904, pp. 384-420, is authority for the statement that women were in those days commonly pharmacists, though not always the proprietors of such shops.

² Weinhold, Ch., "*Altdeutsches Leben*," Chap. VII-VIII, pp. 385-389.

³ The *Sturlunga Saga* is the family history of Sturla Thordarson (1214-1284), or that part of the history between 1116-1264.

VI. *THE HOSPITALS OF THE CENTURY AND THE
NURSING SISTERS*

ALTHOUGH the French king, St. Louis, as has been mentioned, died from the plague without medical attention and almost alone, he had built hospitals in many parts of France for his subjects, and had organized a new school of medicine in Paris to which laymen and married men might be admitted. Here Lanfranc, driven from all other schools because of his marriage, taught large classes. This new college was a long step forward despite the fact that it did not admit women. It is quite possible that if Queen Blanche had been appealed to by a united body of midwives or other intelligent women, the whole question of the higher education of women might have been settled in their favor in the thirteenth century. But they were not organized; and it is doubtful that they would have matriculated in great numbers even at the school of St. Cosmas.

These hospitals built by Saint Louis, like those of Marguerite of Bourgogne, his sister, were of the type of the age, with high vaulted ceilings, long mullioned windows, and delicate carvings. They were supplied with water through lead pipes, and properly drained, although excreta were carted off for fertilizer. Saint Louis also built a large hospital in Paris, and improved the old Hotel Dieu so as to make it more sanitary and comfortable. In Montpellier there was so fine a hospital that its arcaded wards were taken as the model for many new hospitals in Italy and Germany; and, when Lanfranc went to England to reorganize the old hospitals of St. Bartholomew and St. Thomas¹ he did it according to the new plan. (Incidentally he had the attendants wear simple washable garments, especially if they were caring for lepers or cases of fever.)

Pope Innocent III is known in history as a relentless persecutor of heretics; but he also promoted hygiene and built hospitals. Through his efforts leprosy and other skin diseases began to diminish, and sanitation took a long step forward.

Probably the most magnificent hospital of the thirteenth century was however, not in Europe at all, but in Africa, the one at Cairo, built and equipped by the Calif Al Mansur in 1283. Connected with it, we are told, was a large medical library, a mosque, an academy, an orphanage, a home for convalescents, and an external arcade surrounding a

¹ Clay, Rotha Mary, "The Medieval Hospitals of England," 1904.

garden where fountains splashed and the air was sweet with orange blossoms. To complete the picture the walls of the wards were decorated with green and gold tiles, the windows were filled with jewelled glass, the floors were made of inlaid marble or enamelled brick. Clinic rooms and lecture halls were connected with it. Nor is this altogether exceptional. In such another Muslim city, Cordova, there were, we are told, fifteen large hospitals and a sort of primitive visiting nurse association, as well as free hostels where weary men and women, and their animals, might spend the night in comparative comfort.

Virchow¹ and Burdette² both insist that by the end of the thirteenth century there were literally thousands of hospitals and leprosanitaria in Europe, built by monarchs, priests and princes, by good women and by rich merchants, who hoped thereby to gain merit in the next world. As a sort of unintended by-product they gave the thousands of women tending their patients a congenial occupation and a means of real self-expression. Permanent organizations of nursing sisters were founded here and there among the churches. Miss Nutting calls these nursing Orders the advance guard of woman's emancipation.³ At the beginning of the fourteenth century there were two hundred thousand women nurses fearlessly going about the streets and country roads visiting patients and treating their diseases. They wore simple, warm, and comfortable costumes, and were protected from harm by the authorities of Church and State alike.

In Italy at this time were the Gray Nuns of St. Francis and the Poor Clares, the members of which were probably as competent to care for the sick as most of those who called themselves physicians. They diagnosed mainly by sight and smell, working generally quite independently of the "*magisters*." These nurses had studied with other women, and had cultivated their memories assiduously, for books were scarce. In Siena the old hospital of Santa Maria della Scala, opposite the great cathedral, is still in use, its nurses wearing the same costumes, and doing much the same kind of work as they did in the thirteenth century. Although there are no longer lepers, or victims of the plague or famine, among their patients, there are still foundlings, and women

¹ Virchow, Rudolph, "*Krankenhäuser und Hospitalwesen*." Ges. Abhandl. a. d. Gebiete d. öffentlichen Medicin. u. d. Seuchenlehre, vol. II, 1872.

² Burdette, H. C., "Hospitals and Asylums of the World," 1893, vol. 3.

³ Nutting, M. Adelaide, and Dock, Lavinia L., "A History of Nursing," 1907, vol. I, pp. 260-265.

having babies, and wounded men, and deranged people, to be cared for. Eckenstein tells us¹ the beds of the patients in those days were comfortable. They were stuffed with moss, and covered with leather to keep out moisture, and at the head of each bed stood a table upon which were certain eating utensils, along with food and a urinal. These were the hospital conditions that were common throughout France and Italy up until the advent of trained nursing in the nineteenth century.

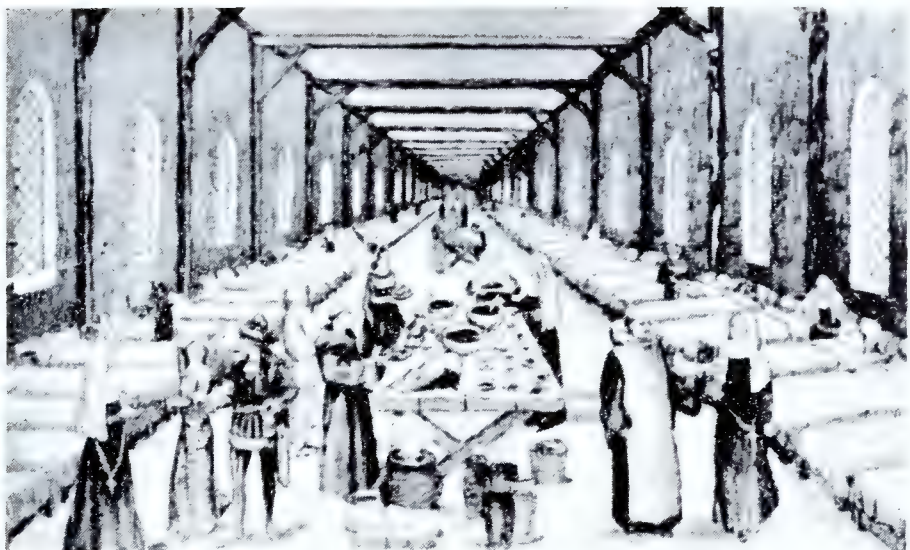
Not all the hospitals of the thirteenth century were of this large public type. Many a humble woman took patients into her house; and many a rich woman gave up a portion, if not all, of her dwelling to the care of the sick. They personally tended their patients, and frequently, as in the case of Queen Hedwig of Poland and Margaret of Germany, their passion for this work amounted to an obsession. In 1287 in Florence, Portinari, the father of Dante's Beatrice, gave his whole house with its twelve beds into the care of Mona Tessa, a skilled medical woman who is thought to have been the founder of the order of the *Oblates*.² The Sforzas of Milan gave one of their palaces for a hospital; and the Accademia di Belle Arti in Venice was originally a hospital of this type.

In France, the work of the Augustinian nuns in the hospitals of the period was of the hardest sort. Although St. Louis tried to improve their condition, they had no independence; and there was almost no limit to their hours of labor. Severely punished by their superiors for even minor offences, they wore haircloth shirts under their robes, and for humility's sake ate from off the floor. Besides their nursing work, it was their duty to cremate still-born babies, and to do all the hospital washing in the cold water of the river. At first they were ruled by a prioress of their own choosing, but before the end of the century this privilege was refused them. Dr. Annie Hamilton,³ in her inaugural thesis, says that in the early fourteenth century nursing ranks were filled by women of the nobility who devoted their means and their lives to the care of the sick. In 1271 Gregory X tried to bring all such women definitely under the rule of the Church; but this was more easily ordered than obtained, for there were certain women, successors of Blanche and Hedwig, who dared to defy even the head of the Church.

¹ Eckenstein, Lina, "Women Under Monasticism," 1896, p. 294.

² Nutting and Dock, op. cit., vol. I, p. 241.

³ Hamilton, Annie Emilie, "*Considérations sur les Infirmières des Hôpitaux*," 1894.



WOMEN DOCTORS AND NURSES IN THE 13TH CENTURY.

An interior view of Rahere's hospital at St. Bartholomew's Church in London.



QUEEN BLANCHE'S HOSPITAL AT ROYAUMONT. THE REFECTORY.

(From Martindale's: "The Woman Doctor and her Future," by permission.)

VII. MEN PHYSICIANS OF THE 13TH CENTURY

WE have little room for even a résumé of the work of the men physicians of this century, but a list of the names of those who mentioned women doctors as their contemporaries, is interesting. Among the Englishmen whose names might be singled out were Roger Bacon (1214-1292), Michael Scot (1175-1232), Bernard Gordon, a teacher at Montpellier (1285-1307), Gilbertus Anglicus, the teacher of Bernard (died in 1230), and Bartholomew Glanville (died in 1283).¹ In Germany there were, among others, the famous Aristotelian teacher at Cologne, Albertus Magnus (1193-1260), and his Italian pupil, the "Angelic Doctor," Thomas Aquinas (died in 1274). In France there were Vincent of Beauvais (died 1292), the surgeon Henri de Mondeville (1260-1320), and the great Italian teacher at the College of St. Cosmas, already mentioned, Lanfranc of Milan (died in 1315). In Italy we find the two Salernitan surgeons, Roger and Roland, whose joint book, written in 1250, was the basis of all surgical work for several hundred years. In Spain there were Peter of Abano (1250-1320), Petrus Hispanensis or Hispanus, Pope John XXI (1220-1277), Arnald of Villanova (1235-1311), and Raymond Lull or Lully (1235-1315), the early medical missionary to North Africa. All of these writers mentioned medical women whom they had seen or known.

Many of these men were teaching priests, either Dominicans or Franciscans. Saint Dominic died in 1221, and Saint Francis five years later. Each had made a tremendous impression on the people of Europe, and had a great following. Robert Grosseteste, who died 1253, was a Franciscan, while Albertus Magnus and Thomas Aquinas were Dominicans, the Dominicans being the so-called Black, or Preaching, Friars.

All these men tried once more to interpret Aristotle. They were scholastics, schoolmen, dogmatic at the expense of being practical. Withington² remarks that Roger Bacon "wrote as if he had the philosopher's stone up his sleeve, and the elixir of life behind his back," but for

¹ Garrison, Fielding H., "History of Medicine," ed. 1913, p. 110. Also Garrison's article, "The Historical Collection of Medical Classics in the Library of the Surgeon General's Office." *Jour. of the American Medical Association*, June 17, 1911, pp. 1785-1792.

² Withington, E. T., "The Authorities and estimate... of Bacon's medical references, vol. IX, p. 31, *De Retardatione accidentum senectutis*, in *Opera hactenus inedita Rogeri Baconi*. 1928. Also articles by Robert Steele in Singer's "Studies and Methods of Science," vol. II. Also Thorndike, Lynn, "Magic and Experimental Science," vol. II.

all that he was a real philosopher, and so zealous an experimenter, that twenty years of his life were spent in prison for his "heresies." Material as Bacon's contributions were in other fields of learning, in medicine they were slight.

The books of Bernard Gordon, John of Gaddesden, and Bartholomew Glanville were of more practical value as medical text-books than the great "*Speculum*" which Bacon projected. These Englishmen had studied in Salerno, Montpellier and Paris. They could translate from Arabic and write in Latin, and they tried to enlighten their countrymen as to the latest methods in the diagnosis and cure of disease. Each gave his books a literally flowery title; Bernard's was "The Lily of Medicine," John's the "*Rosa Anglica*."¹ Bernard hinted at the contagiousness of phthisis, anthrax, erysipelas, and even epilepsy. He also praised the "obstetrix" of his day, with her "long, slim fingers, and gentle hands, her ability to dilate the os uteri expeditiously, and to place tampons where they could do the most good in healing vaginal or uterine diseases." John was more of a believer in drugs than Bernard. But he also was the child of his age, and advised the use of charms and amulets, and of remedies of the "shot-gun" variety, containing from fifty to seventy-five ingredients, many of them difficult to obtain.

Bartholomew Glanville, or Anglicus, another Englishman of this period, called his book "*De Proprietatis Rerum*." This was a medical text-book which was often copied and early printed (Basle, 1470, England, 1495) and used by students for generations. Shakespeare saw a copy of it. It was illustrated—unusual at this time. There is one picture of an autopsy at which only men are present; but another picture shows a sort of pharmaceutical laboratory of which a woman seems to be in charge, for she is seated, sorting herbs and directing the labors of two students.² These men had studied in Salerno and Montpellier and were accustomed to see women as doctors.

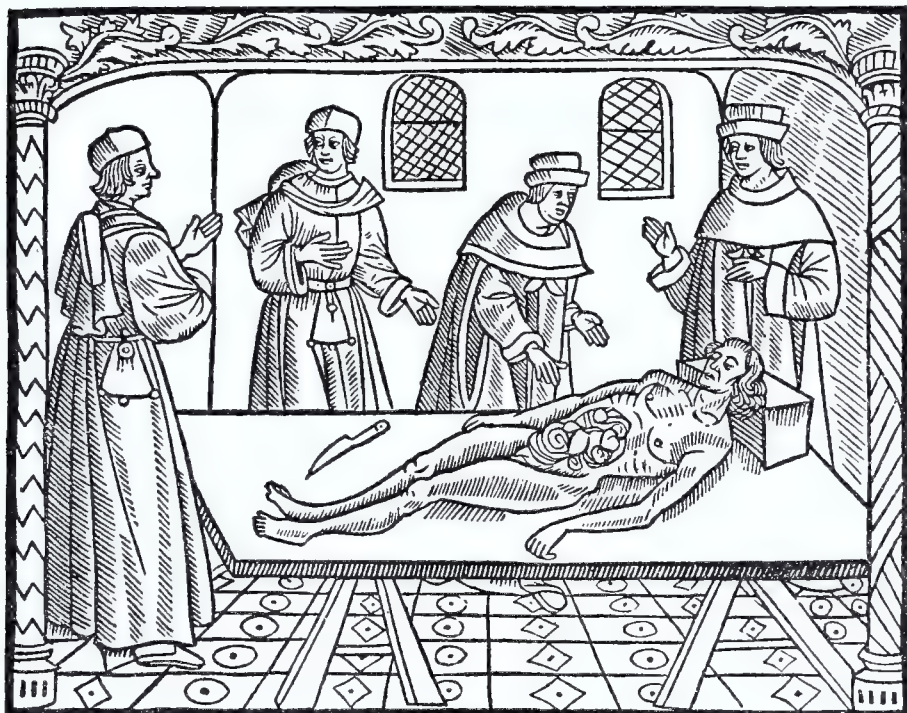
In Italy Peter of Abano, a Paduan scholastic philosopher, was burned in effigy for heresy of a special sort—he contradicted Galen.³

¹ Crump and Jacobs, "Legacy of the Middle Ages," 1926, p. 160.

² Thorndike, Lynn, "History of Magic and Experimental Science," pp. 406-413. Bartholomaeus Anglicus cured epileptic fits by shaving the scalp, washing it with tepid vinegar, and covering it with the brains of a pig or cow. Also he adds: "Take three drops of blood from his scalp and after he recovers from the fit, give them to him to eat with a crow's egg."

³ DeMondeville, a friend of Lanfranc, and a great anatomist, dared also to contradict Galen. He is the author of the famous phrase, "God did not exhaust all his creative power in making Galen." This was a propos of his theory that wounds might be healed without pus, whereas for a thousand years Galen's "laudable pus" had been accepted by all except the Salernitans.

He honestly believed that astronomy was the only valuable study for a physician, that the Lord had created seven herbs, corresponding to the seven planets, that would not only cure all diseases but would bring victory in war. The only trouble was to find them and prepare them properly. We have nevertheless to thank this same Peter of Abano for bringing Trotula into the light once more, along with Mesue, and certain almost forgotten Arabic writers. His friend and contemporary, Simon a Cordo, is also to be thanked, this time for giving us a record of a thirteenth century physician's library. In it were manuscripts of



A DISSECTION IN THE 13TH CENTURY

(From Bartholomaeus Anglicus: "*Propriétaire des choses*." Paris, 1510)

Galen, Dioscorides, Democritus, Demosthenes, Oribasius, Celsus, and Moschion, Alexander's *Secrets*, and the works of a few of the Salernitans and the Arabians.

Among the Spaniards who wrote medical books were three men who admitted an indebtedness to medical women: Arnald of Villanova, a town near Valencia (1234-1311); Petrus Hispanus who in 1276 became Pope John XXI (died 1277); and Raymond Lull. To Arnald, as has already been mentioned, it is thought that we owe the first long

version of the "*Regimen Salernitatum*" in rhyme. Arnald could read Greek, Hebrew and Arabic, as well as the modern languages. He studied medicine in Montpellier, and taught there. We have a picture of him as a lecturer, sitting on a low stool in a garden surrounded by both men and women pupils, none of them young or frivolous looking. He tells us that he learned many of his remedies from medical women. There was one in Rome, he said, who cured sore throat with a remarkable plaster of her own composition, another in Montpellier who cured a man of serious hemorrhage by a secret remedy, and another who cured a case of small-pox by wrapping the patient in a red cloth—apparently the first reference to the theory that there is healing in color. Arnald also said that he had learned from women how to gather herbs at the proper time, generally at certain phases of the moon, and the value of certain charms and magic stones. Arnald was anathematized after his death, but being during his life physician to several kings, he was not before disturbed. He endeavored to link the seven great metals to the seven great planets and the seven organs of the body, as was attempted a century previously by the abbess Herrade of Landsberg, and, along with astrology and alchemy, believed in all sorts of magic. He is said to have cured Pope Boniface VIII of hernia by a charmed ring—supplemented, however, with medicine and a truss!

Raymond Lull, 1235-1315, the "Enlightened Doctor" of Spain, during his peaceful penetration of North Africa as a missionary preached both religion and medicine to the men and women who gathered about him. He was born on the island of Majorca in 1235. He tried to invent some method by which all questions could be answered with mathematical precision, and hunted for liquid gold as a universal elixir, and for the philosopher's stone.

Peter of Spain (1220-1277) was the son of a Portuguese physician, educated at the University of Paris. He became a "*Magister*," and was appointed professor of medicine at the new university in Siena. Still later he was physician to the Pope, who raised him to the position of archiater, or head, of the department of health in Rome. Then he became archbishop of Lisbon, and eventually himself Pope, John XXI. In the meantime he had written an important book on the diseases of the eye, and a famous "*Thesaurus Pauperum*" or "Treasury for the Poor." This latter book was a veritable *multum in parvo*, a little encyclopedia¹ of medicine which was used by students for centuries

¹ The contents and style of the "*Thesaurus*" may be judged by the following sample headings: "*Contra lo male di matrice*"; "*A provare lo tempe delle donne*"; "*Contra la difficultà del parturire*"; "*Contra lo cancro*"; "*Contra la lepra*," etc.

because of its simplicity and brevity. Peter of Spain mentions many ancient medical authorities by name, and makes five references to Trotula and the other medical women of Salerno. He was acquainted with Dante, who admired him to such an extent that he gave him a place in Paradise, "....." him of Spain, Who through twelve volumes full of light descants."¹

Albertus Magnus (1193-1280), a Suabian German monk, whose work was done at the university of Cologne, was a wonder of erudition for the thirteenth century. He was the discoverer of the nervous system in plants, the forerunner of modern psychologists, and a believer in the transmutation of metals—which, curiously, modern science is just now making possible, thanks to the pioneer researches of Madame Curie and her husband. His motto was "*Experimentum solum certificat in talibus*"; and he was the author of no less than sixty-six books, among them the popular "*De Secretis Mulierum*,"² which, because of its contents, was soon placed on the "*Index Expurgatorius*." This book contains a frank discussion of the questions of sex, rules for the prevention of conception, together with methods of foretelling the sex of children, the reasons for twin-pregnancies, the effect of the stars, sun and sky on children, etc. Albertus believed in the higher education of women, reasoning that the Virgin Mary must have known the Seven Liberal Arts, and that she was an example to all women. Albertus died insane at the age of eighty-seven.

Of Michael Scot (1175-1235) it may be said, though born in Scotland and spending most of his life there, he was a thorough cosmopolitan. He was a wizard, an astrologer, a philosopher, a collector of books on history, and an imaginative recorder of whatever he found to record. In his book on Physiognomy³ he drew largely from Aristotle, as was the fashion, and he also borrowed animal tales from the Arabs, and the explanation of generation and birth, signs and dreams, from apochryphal Greek sources. His book on medicines and the diseases of children he took from Rhazes, writing in "easy Latin," chapters on generation, mothers' milk, and the signs of hot and cold complexions.

¹ *Paradiso*, Canto XII, 134-5. The book to which Dante refers is not the medical book, but one which he wrote on logic, which is in twelve volumes or parts.

² Garrison (ed. 1914, p. 111), says that Albertus Magnus, being a Dominican, was not allowed to write on the practice of medicine, and that therefore this work was written probably by a pupil of his, perhaps Henry of Saxony.

³ "*Liber physiognomiae magistri Michaelis Scoti*," printed in Basle in 1485, and perhaps also by Aldus in 1490.

He translated for his royal master (he was court physician to Frederick II) nineteen books from the Arabic dealing with signs and the interpretation of dreams, believing that they often indicated the proper medicine to use in the treatment of a disease.

In another of his volumes he taught the midwives a good many queer things about gynecology, such as that, if a woman is born under seven planets, she will have seven babies at one birth, and that if, when she discovers her pregnancy, she extends her right hand first, the baby will be a boy, etc. etc. He believed that many diseases could be cured by a mixture of sorcery and menstrual blood or semen; and among his remedies we find the urine of a boy and the blood of an owl. He drew for his readers a picture of a human body marked with the proper places for bleeding according to the signs of the zodiac. He thought that a baby born in the eighth month was inevitably "under the wrong stars" and would not live—a theory occasionally heard even today.¹ Osler humorously said that Scot's psychology merely antedated Freud, while Dante was for punishing him in Hell for his heresies and magic. This seems to have been the first midwifery book written by any man for women.

*Quell'altro, che ne' fianchi è così poco,
Michele Scotto fu che veramente
Delle magiche frode seppe il gioco.**

Among French medical writers of the thirteenth century were the encyclopedists, Thomas of Cantimpré and Vincent of Beauvais. We are particularly interested in Thomas because, for his own daughter, he copied Cleopatra's gynecology. Some of the experiences he describes have no counterpart except "Alice in Wonderland." The work of Vincent of Beauvais was even more prodigious. Between 1240 and 1264 he compiled the "*Imago Mundi*," largely from twelve hundred manuscripts in the library of Saint Louis, for the copying of which he employed four hundred and fifty writers. His great "*Speculum Majus*" finally comprised no less than eighty books, and nearly ten thousand chapters.³

¹ Sarton says that the only medical book positively known to have been written by Scot was the "*Physionomia*," also called "*Liber physiognomiae*," which, however, contains a treatise, "*De urinis*." Sarton, op. cit., vol. II, part II, p. 580.

² *Inferno*, Canto XX, 115-117.

³ See article in the Encyclopedia Britannica, also Lynn Thorndike's and Singer's works on "Magic and Science," and Haskins' "Michael Scot in Spain," *Isis*, no. 15, p. 406.

VIII. REMEDIES OF THE THIRTEENTH CENTURY

IN looking through the books written by medical men in the thirteenth century we are struck with the fact that their remedies were generally used only because of some supposedly inherent "hot" or "cold," "moist" or "dry" effect. There was no study of the specific action of such drugs as were combined into their "shot-gun" mixtures, any more than there was study of the dietary effect of their foods. Peter of Abano said that the diet "should be rational"; but he also added that a bezoar stone carried in the pocket would protect a person from poison, which was—perhaps not without reason in those days—dreaded more than indigestion. For the stomach's sake he advised an emetic once in a while, the simplest he suggested being a cup of hot butter in water, the butter presumably rancid.

The common drugs in this century were aloes, amber, aristolochia, clematis, aurum (gold)—if the patient could afford it—calamint, camomile, camphor, cantharides, carob bean, cassia, cinnamon, cabbage, celandine, crocus, cubebs, wild carrot, diacameron (containing both gold and silver), musk and amber (popular for asthma, weakness, and backache), rosemary and orris root, lead plaster, dittany, dragon-tree, wild arum, dodders, fennel, pistache nuts (to "comfort" the stomach), sour grass, cherry laurel and fumitory juice (for melancholia), hellebore (for fumigation and for use as an emetic), colchicum (for gout), elecampane, pomegranates, prunes, five kinds of oils (including soft soap, and oil from squills), lemons, petroleum ("which was black and had a vile odor"), origanum and wild marjoram, pearls (to be melted and rubbed into spots of leprosy), portulaca, pyrethrum, radish, rhubarb, elder, sandal-wood and sandal oil, senna from Arabia, terra sigillata (made famous by Galen), theriac (already mentioned, with its scores of ingredients), and valerian (for the nerves). And of course many other herbs or minerals were occasionally mentioned.

In southern Italy asphodel, which grows in such profusion along the waysides in all the southern countries that poets even in Homer's time made it the subject of their sonnets, was a household remedy for the healing of wounds. It is a tall, lily-like plant, with little whitish, star-shaped flowers growing on long stems like candles on a Christmas tree. Its leaves droop like a broken sword and it has no odor; but, as it was believed that nothing was created without a purpose, the common asphodel was used as a poultice, especially for sword wounds.

From the "Golden Legend," or "*Lombardica hystoria*," of Jacobus of Voragine, archbishop of Genoa (died 1298), we may catch something of the mystic charm of some of the old remedies of this time. He tells us to "gather motherwort when the sun is entering Capricorn, dry it; make garters of the skin of a young hare, double them and sew the motherwort between the folds; wear the garters; no horse can keep up with a man on foot who wears them." And again, "make a staff of hollow willow wood; at its bottom put the eyes of a wolf, the tongue of a dog, and its heart, three green lizards and the hearts of three swallows. Place them in the sun covered with saltpeter, add seven leaves of vervain gathered on the eve of St. John the Baptist, and the stones from a lapwing's nest; you will be protected from robbers, wild beasts, dogs and venomous animals, and it will find you a lodging." Kipling names for us the remedies used in Old England:

"Alexanders and Marigold,
 Eyebright, Orris, and Elecampane,
 Basil, Rocket, Valerian, Rue,
 (Almost singing themselves they run),
 Vervain, Dittany, Call-me-to-you,
 Cowslip, Melilot, Rose-of-the-sun,
 Anything green that grew out of the mould
 Was an excellent herb to our fathers of old."

—Kipling's "*Our Fathers of Old*."

Many of these herbs that he names are still used by country women today. We still hear praise of dandelion as a laxative and liver tonic, of sweet marjoram for headache, of catnip for nerves, colchicum for gout, tansy for uterine inertia, and boneset tea for a fresh cold.

It is interesting also to note that the doctors of those days had somehow gained the idea that the contagion of disease came from the air surrounding the patient; and consequently, when visiting the sick, they wore over the nose and mouth a handkerchief soaked in vinegar. Often, as a result of the same idea, the sick patient was almost smothered in an atmosphere of steaming juniper berries, calamus root or pine needles. There was as yet, however, no realization of a generalized protection against epidemic diseases, because for almost seven hundred years there was to be no adequate theory as to their causes.

In Scandinavia it seems to have been the custom for women doctors when visiting patients to carry in their bags all sorts of remedies for any emergency. They were supposed to stay with the patient as long as was necessary, and to prepare their medicines on the spot. Some curious ancient customs still prevailed in the North in the thirteenth century;



HOSPITAL SCENES, 13TH CENTURY.

In the first women are receiving the sick at the hospital, in the second caring for them in bed. (From a contemporary manuscript preserved in the Bibliothèque Nationale, No. 8846.)

such, for instance, as the pleasant one that there might be a vicarious cure of patients by the sacrifice of a child. The child because it was sinless, might, if buried alive, stay an epidemic!

In England, according to Thorndike, the remedies of Bartholomew Glanville, culled out of Constantine or Dioscorides, were in demand. For headache, for example, the head was to be shaved, and covered with warm cow dung, or the patient's shin bone was to be scarified to "draw down" the pain. For epilepsy one used a decoction of crow's eggs and three hairs from the head of the patient. For leprosy the belly of a snake, rubbed with garlic and cooked in wine, was to be applied to the patient's sores.

The remedies of Michael Scot, on the other hand, were chiefly those of Salerno. One of his pills contained a dozen ingredients; but, when compounded, it was good for the plague, stomach ache, abscess of the ear, or for sunstroke. Steele¹ tells us that one of Roger Bacon's remedies, taken from the "*Secretum Secretorum*," was supposed to have been written by Aristotle for his pupil Alexander. Into a syrup of fruit juices and honey a decoction of roses and violets was stirred, with the addition of parsley water, sweet marjoram and bugloss, myrobalans and cloves. After standing twenty-four hours this mixture was boiled down to one-third along with musk, ambergris and aloes. This concoction was said to "strengthen" the heart, brain and stomach. The dose is not indicated. Steele also gives us what he calls a remedy involving "a grand orgy of expense" as a supreme panacea. It contained powdered pearls, rubies, sapphires and amethysts, emerald dust and finely divided gold, incorporated in an electuary in a gold pot, incensed with aloes. The product was then exposed to the influence of the heavens for eight days, being carefully guarded from exposure to the moon in her malignant aspects. The dose was one dram fasting, and one dram after meat.

Peter of Spain seems to have preferred animal remedies. He professed to find great value in the liver of a vulture, taken piecemeal for nine days in succession along with the blood of the bird. To cure toothache he used burnt human bones, or the tooth of a dead man, or dog's milk and opium. To cure witchcraft or obsessions he prescribed the heart of a vulture worn as an amulet. He quoted many remedies from the women of Salerno, but he was more of an endocrinologist than they, being much given to prescribing the sex organs of various animals as a

¹ Steele, Robert, "A Mediaeval Panacea," Proc. Roy. Soc. Med. Section of the History of Medicine, 1917, 10, 93.

sort of elixir of life. Like his somewhat younger contemporary, Peter of Abano, he delighted in asking questions not answerable in the thirteenth century: Is bad food more injurious than bad air? Should the diet of a brain worker equal that of a muscle worker? Why is man less hairy than the brutes? Are medicines always given by contraries? Does our blood nourish us? Is water of more aid than wine in assimilating foods? Why is the white of egg used for wounds? Why does a small hen lay more eggs than a large one? Is human milk subtler than asses' milk? Why does human urine enrich vines? Should eggs be eaten raw? Should paralytics eat fish? Why is oil best at the top, honey at the bottom, and wine in the middle of the cask?

Almost a generation later Peter of Abano continues in the same vein; he asks, for example, if the power of the mind could make a camel enter a Turkish bath, why eggs are beneficial in fevers, if paralysis of the right side is always harder to cure than of the left side, if milk always agrees with consumptives, if blood-letting from the left arm will cure gout of the left foot, and why the bite of a fasting man is poisonous.¹ It has taken six hundred years to answer some of these questions.

IX. THE SURGERY OF THE 13TH CENTURY

PERHAPS the most nearly universal panacea of the thirteenth century was bleeding. Doctors, midwives, barbers and surgeons all bled, according to the moon, the calendar, and the signs of the zodiac, and no matter what the disease or the condition of the patient.² To mingle one's blood with that of a friend, as did Duguesclin and Oliver, was a sign of the fulfilment of a pact. A man who found fault with his wife called a barber to bleed her to bring her to terms. In the homes and convents and hospitals bleeding was regularly done two or more times a year, but not to the extent that it was done in the sixteenth century. There was a belief that the body of an adult contained twenty-four pounds of blood, of which a man could always profitably lose twenty at once, the argument being based on the analogy that the more milk a nursing mother gives a baby the more she has. The theory of bleeding in fever was that by bleeding the bad blood would escape and only the good remain.

In the early manuscripts³ we find more women than men pictured

¹ Thorndike, "Magic and Experimental Science," vol. II, p. 887.

² Franklin, Alfred, "*La Vie Privée d'autrefois, du XIII^e au XVIII^e siècle*," 1893.

³ Richer, Paul, "*L'Art et la Médecine*," p. 479 et seq.

as treating patients by bleeding and cupping and cautery.¹ Occasionally there appears to be a dignified surgeon, wearing a full beard and long robe, sitting at a table as if he were the ultimate authority, but the majority of attendants in the room are women.

Sudhoff² gives many pictures of men and women being treated. In many cases the operator seems to be a woman, wearing a hooded white gown or a handkerchief knotted over her hair, a white skirt and a long mantle. In one picture a woman holds a cauterizing tool in her right hand while the left is held up with warning gesture. She purports to be ready to touch several points on the patient's abdomen to cure him of dropsy. In another picture in an old manuscript is a boy blowing the bellows to make the fire blaze to heat the cautery. In another a woman patient is lying on a couch while an attendant uses two large hot pokers on her naked body. In another, a man, semi-nude, exhibits his back, marked by a long, burnt streak; and another man displays many small blisters on his face, put there to cure headache.

Both nurses and monks are shown in these illustrations, bandaging broken bones, removing polypi from the nose, burning hemorrhoids, hooking out teeth, and operating on eyes. In an early manuscript³ of Roger of Salerno, the operator is wearing a short gown and a tight cap like the garments prescribed for barbers at St. Cosmas. In a few instances a turbaned Arab, or a man with Jewish features and a skull cap, is operating. In an Oxford manuscript a bearded and capless doctor prepares, with wild gestures, to bleed a meek patient, who is standing before him holding a bowl to receive his own blood. In pictures of bath scenes women are officiating with cups and towels, or giving a steam treatment.

Thus we see that the thirteenth century differed little from the twelfth as regards the study and practice of medicine by women, but again we notice indications that these women were not as progressive and attentive in their diagnosis of disease and treatment of patients, as formerly. In obstetric work, the thirteenth century lagged markedly behind. The Church held firmly to the conviction that the relics of the saints and prayer could cure whatever the Lord wished to have cured. "*Plus valet Christus quam Hippocrates et Galenus.*" As a result the list of queens and noble women who died in childbed is a long one. The wife of Frederick II, the great emperor, and the sister of Henry III of

¹ Giacosa, Piero, "*Magistri Salernitani nondum editi*," with Atlas. 1901.

² Sudhoff, Karl, "*Beitrage sur Geschichte der Chirurgie im Mittelalter*," 1914.

³ Handerson, H. E., (Baas) "*The School of Salerno*," 1889. Also Gurlt's "*Geschichte der Chirurgie*," 1898, and Malgaigne's "*Histoire de Chirurgie*," 1640.

England, both died because of timidity on the part of their midwives to perform version of the unborn baby, although the process had been well taught by Cleopatra in the first century, and again by Trotula in the eleventh. Indeed, midwives of the thirteenth century were advised to wait until the mother was dead, and then to remove the infant by Caesarian section, hoping at least to save its life. Relics of saints availed little against distocia of the pelvis; but fortunately most labors were normal, and required no unusual midwifery. Mothers, if poor, were expected to nurse their babies, but not if rich. As soon as infants of the nobility were born, they were bathed and baptized; their horoscopes were taken; and they were carried off by a wet-nurse. The lying-in room, in the meantime, had been well filled with relatives and friends, nurses and midwives, and even by men of the court if there had been, or might be, any question of paternity, all of whom had watched the progress of the labor with curiosity or sympathy or encouragement. Among the lower classes, however, obstetrics was even more crude than a thousand years earlier, and puerperal fever was expected on or before the third day.

X. THE 13TH CENTURY—CONCLUSION

IN the thirteenth century printing was still in the future. What books existed were still in manuscript, laboriously copied. Parchment was costly, papyrus very rare; and copying manuscripts from a strange script, and in a cold cell, must have been tedious work, particularly if the book being copied was not the Bible, a Breviary, or Book of Hours or other religious book. The copying of such books as these at least gave the monk or nun copying them the hope of reward in Heaven. No wonder that some of these old scribes wrote at the end of their text, "Sweet it is to write the end of any book," or "I swear by all the saints that I will pray for the vengeance that overtook Sodom on anyone who destroys this book."

There were, it is true, libraries in existence. But the cost of making manuscript books, by pen and brushwork, was appalling. Only the rich could buy books. The poor could not even read. This being the situation what was more natural than that men with a mere smattering of knowledge should pose as educated in medicine, and should travel around as physicians and surgeons? Rutebeuf¹ was such a peripatetic impostor.

¹ Rutebeuf, "*Le Dex de l'Erberie*," and De Renzi, op. cit., vol. II, p. 58.

He is thus referred to:

“Calls himself doctor, any fool,
Jew or monk, actor, barber, witch,
Whether alchemist or massagist,
Or bather or falsest oculist.
Where gold is the object
Art and nature perish.”

Like other troubadours Rutebeuf sang his medical tales to the tune of a harp. He says that impostors carried immense packs of remedies with them, whereas his hero did not spread his wares upon the ground to sell them because they were too precious. They had been gathered from far countries, even “from Salerno,” where, he adds, a great woman doctor “named Trotula”¹ had shown him how to use her pills and powders. And he concludes: “Take this in white wine or red, or in water, every morning for thirteen days, and you will be cured, no matter what disease you have. Medicines bitter to the mouth are good for the heart.”

Similarly, in the “Golden Legend” of Jacob de Voragine Lucifer says:

“You behold in me
Only a traveling physician,
One of the few who have a mission
To cure incurable diseases.”

In short the people who liked to be humbugged were in the thirteenth century as numerous as at any other time, and the humbuggers were, if anything, a little more numerous. The main desideration seemed to be to offer the sufferer a remedy more nasty, or more costly, or both.

Despite the fact that few or no women wrote books on medical subjects during the thirteenth century there was clearly no lack of women doing medical work, and doing it with common sense, devotion and self-sacrifice. As opportunity pushed them into public service women were beginning to be emancipated from the ignorance of former ages. Wealthy women were not only building hospitals but were devoting their own lives to the care of their patients. They were not ashamed of doing the most menial tasks if it was for the glory of God. Their religion was as intense and spiritual as it was practical; it was therefore in a new way and a new sense uplifting. These humble medical women of the thirteenth century were like the bits of colored glass in a cathedral window, each piece important but each inconspicuous. Few of them were playing a large role, but collectively they were handing on the torch to succeeding generations.

¹ Trotula of Salerno “whose bonnet covers her ears, and from beside her eyebrows there hang long silver chains reaching her shoulders.” This sort of cap decorated with jewels and pendants is worn by Moroccan Jewish brides today. See page 20, Franklin, *op. cit.*

Chapter VI

The Fourteenth Century

I. THE 14TH CENTURY—WARS AND EPIDEMICS

JUST as no line of demarcation has been found to separate any of the earlier centuries, so the fourteenth was separated from the thirteenth merely by a date on the calendar. In many ways it was both better and worse than its predecessors. Instead of Crusades the century saw a succession of wars and pestilences and tragedies. The Holy Sepulchre was in the possession of the Infidels, and there it stayed for many centuries. The age was more materialistic than those preceding, and, while the African desert had lost its glamour, the lure of gold was strong, and men were ready on the instant to go to war for private or royal gain. These wars were not managed with what we would now deem military skill. Soldiers were as a rule mercenaries, lacking firm control, loaded down with heavy weapons, pikes, maces, and stones for slings, while the leaders were almost incapable of quick action because of their heavy armor, battle axes, and spears.

The West, in becoming permeated with the luxuries of the East, had also become suffused with its immorality. Superstition and magic were taking the place of real religion; and, while the spiritual power of the Church was waning, the political aspirations of its popes were rapidly increasing. It was the century of their so-called "Babylonian Captivity," when for over seventy years, between 1305 and 1377, they dictated the religion of the western world from their great walled city and fortress-like palace at Avignon in southern France.

Medicine as a science was practically at a standstill during this century. Universities were in the process of foundation all over Europe, but the general methods of teaching medicine were prescribed by the Church. It is true that a few more anatomical dissections were permitted both in France and in Italy, either as autopsies in cases of suspected poisoning, or on the bodies of criminals. Hospitals were larger, and their architecture was more beautiful, than ever before, as the

donors had more money with which to decorate them. The general standard of living, undoubtedly, was higher than in previous centuries, and probably the span of life would have been longer had it not been for war and pestilence.

Women in this century outnumbered men seven to one. It has been estimated that almost six million men were swallowed up in the Crusades¹ of the thirteenth century and the wars of the fourteenth.²

But war took far less toll than pestilence. It has been estimated that as many as sixty million people, most of them the young and strong, died of the so-called Black Death alone, which recurred seven times during the century. The disease was probably the bubonic plague, being called the Black Death because of the hemorrhagic spots it caused on the body. Rivers were polluted, and rats revelled in the carnage and then died in the streets. The dead were buried by the cartful in pits outside the city walls. At Westminster, for example, the abbot and twenty-six monks died; at St. Albans forty died; everywhere the fatalities were enormous. In 1350 the population of London was only half what it had been ten years earlier, while eight years after the plague of 1349 the city was still one-third uninhabited.³

There is but little confirmation of the assumption that during these epidemics women cared for the majority of the ill, but, for all that, the assumption is a reasonable one, for only churchmen of the lowest order were allowed to practice medicine, laymen as physicians and surgeons were few, and many relied on physicians who were really astrologers, who merely glanced at the urine of their patients, and then consulted the stars for prognosis. There were also the barbers, but they were content to be tooth pullers and bleeders. All these were alike in being thoroughly afraid of the plague. Even Guy de Chauliac, the most famous surgeon and writer of the century, ran away from Avignon when the plague started there; but it is recorded that he pulled himself together, returned, wrapped his body from head to foot in a sort of shroud with a face mask, and went among the people with his knife, lancing buboes like any ordinary quack salver. This was the only treatment that seemed to do any good.

In 1361, and at four other times, came the *pestis secunda*, or *pestis puerorum*, which carried off many children. People were hardened to

¹ See article on the "Crusades," *Encyclopedia Britannica*, 14th Edition.

² Vickers, Kenneth M., "England in the Later Middle Ages," 1914, Chap. IX.

³ Vickers, *op. cit.*, p. 185.

infant mortality, however, and Charles of Anjou is quoted as saying that he did not grieve for his son "because children multiply speedily, and a son can be replaced, but not a father."

The people learned nothing about sanitation from these epidemics. When the widow of Edward II was to be buried in Grey Friars' Church, London, the streets round about had to be cleaned by the "rakers" before the cortège could pass.¹ This was in 1359. Though filthy with offal, the Thames was continually used for drinking water, despite laws forbidding the practice. The homes of the poor were much overcrowded. As immorality increased, pilgrimages to holy tombs became mere revels; funerals became feasts; and indecent games were played in every church-yard. Doctors were called murderers—"murderers are many leeches" says Piers Plowman. Quacks made money easily, though their deeds were against the law, and fines were heavy if they were caught. Licensed doctors were so few that patients gladly turned to women, who at least were ready to try to ease their pain.

The teachings of Rhazes as to contagious diseases were still current. He listed eight: plague, phthisis, epilepsy, scabies, erysipelas, anthrax, leprosy, and an eye disease resembling trachoma.² The author of Sir John Mandeville's travels, John of Burgundy, who was a physician of Liège, wrote a tract in 1395 which sought not so much to describe the symptomatology of the great epidemics as to discuss their causes, prevention, and treatment. He found the stars and corrupt air to blame for the Black Death; although Jacob Grimm³ is authority for the statement that between 1324 and 1349 Bovarius had collected facts in Berne to prove that all epidemics were caused by insects, flies, spiders, etc. The latter theory failed to convince the university teachers of its probability, even though it had been hinted long centuries earlier in Aesop's Fables. Nobody followed up the suggestion, or made any experiments to prove or disapprove it. Sir John said that the epidemic of 1348 on the Continent had carried off 8,000 legions of soldiers, besides peaceful Christians, Saracens, and Jews. For the prevention of contagion he advised staying in the house with the windows closed to keep out the corrupt air, and the continuous burning of juniper on the hearth until all the cases had been cured, or had died and been

¹ Vickers, op. cit., p. 184.

² For a description of these epidemics, see Baas, J. H., "*Grundriss der Geschichte der Medicin*," 1876, p. 249.

³ Grimm, Jacob, "*Kleinere Schriften*," 1871, p. 400.

buried. He said also that everybody should keep his hands clean and frequently dip them in rose-water or vinegar, but that baths should not be taken for fear of opening the pores of the skin. In diet he recommended the avoidance of fruits and honey, but he believed that every other kind of food in moderation was harmless. Sleep should be insisted upon after a hearty meal. Blood should be "let" once a month. If despite these measures of prevention plague should attack, its treatment should be by teas of dictamnus, scabious, roses, and violets, together with the lancing of all abscesses.

Among other contagious diseases, erysipelas was very common in the fourteenth century, as were gangrene, due to a fungus (ergot of rye) in bread, and leprosy. These were often mistaken, one for another. Smallpox and measles were so endemic as to be seldom mentioned. There were also terrible epidemics of sweating sickness, which carried off thousands of victims in wild delirium, and a dancing mania allied to the St. Vitus' dance of the preceding century, which sent people gyrating through the streets half naked until they dropped from sheer exhaustion. Besides all these diseased men, women, and children, there were at large hundreds of maniacs who were supposed to be in league with the devil. Many of these were bound to stakes and tortured, if not killed, in order to exorcise their demon.

Perhaps the only lasting good outcome of all this misery was the quarantine system, which was instituted at many ports to prevent the transmission inland of the diseases brought from other ports. Ragusa, on the coast of the Adriatic, is said to have been the first port to be thus quarantined. This was in 1370. Venice and Marseilles soon followed. Even so the plague was carried to Great Britain, and to the shores of Scandinavia and the Baltic.¹

Garrison,² points out that, though ignorance of medicine and sanitation was no more general than before the Crusades, the ostracizing of the Jews and other restrictions severely handicapped medical progress. Surgery was "at a lower level than among the Greeks at the time of the Trojan war," operations being mainly in the hands of barbers, quacks, and women who had had no university education. In 1368, however, the surgeons of England formed a Guild. Thereafter barbers were permitted only to pull teeth, give enemas, bleed, and shave. Baas³ tells us

¹ Sigrid Undset in the Nobel prize romance, "*Kristin Lavransdatter*," has given us a good description of the plague as it raged in Norway in the late Middle Ages.

² Ed. 1914, op. cit., p. 113.

³ Op. cit., p. 270.

that it was in this century that the cupping basin became the official sign of barbers, while the sign of physicians was either a white handkerchief, a coat of arms, or a parrot on a gold ground. Gradually, however, the Church was obliged to concede more and more liberty to the medical profession, and to foster the practice of medicine as well as surgery by the laity.

II. HOME LIFE OF THE 14TH CENTURY

IN the fourteenth century the peasants began vigorously to demand more freedom and more comforts. Intellectual work was decreased. The clergy had become lazy and overfed. The majority of men and women could neither read nor write, although among the literate minority more women than men seem to have been able to read in their own languages. For such women many lay books and prayer books were translated, while for rich and well educated women manuscripts in Latin were beautifully copied and decorated. Few men read medical or religious books in their original languages, and still fewer medical writers signed their books or translations. After several men or women had worked over the same manuscript there was likely to be little left of the original material. The monastic leaders in education were discouraged by their bishops from "buying or fabricating books," for as one old monk said, "No one should serve books or Mammon." It was at about the middle of this century when the abbot of St. Albans sold his own thirty-two books for fifty pounds. After the Black Death of 1349, some of the English schools were opened to girls, who learned there how to read and write, as well as to embroider, weave, and spin. In Florence, girls studied Italian along with commercial subjects.

Even at that time, France dictated the styles of women's clothing. The costumes of rich men, as well as of their families, were becoming even more elaborate than before. Miss Bateson¹ tells us that French women wore gorgeous robes, but that men were their dressmakers.

Moreover, in France, wealthy people of the nobility and merchant classes wore imported silks and gauzy tissues from Italy, gold and silver embroideries from Lucca, and wools from Flanders. In Italy both men and women chose to trim their clothes with furs from Scandinavia and to buy Tyrian dyes and jewels from the Far East. In England so popular was Flemish cloth that its importation was almost prohibited by governmental taxation.

¹ Bateson, Mary, "Mediaeval England," 1904, pp. 295 et seq.



A SICK BED SCENE, 14TH CENTURY

(A woman doctor reads from Galen, while monks exhort the patient and examine the urine. A nurse brings food. From a drawing by Israel Von Mencken, 1489.)

Instead of warm, loose robes,¹ the women began to wear tightly fitting garments, cut very décolleté. They had caps with high horns from which flowed a veil, their skirts were clinging, but trailed in the dust. Girls wore their hair in two long plaits before their marriage, and dressed more simply than their mothers. Men vied with one another in wearing elaborate garments, and by 1389 they belted their waists, had their under-jackets embroidered, wore gay colored stockings below their knee-breeches, and bright velvet caps, long-toed shoes, and loose gloves. Christine de Pisan tells us that in Paris the archbishop thundered against such display by the men, and against women who painted their faces and wore false hair.²

From Chaucer's "Canterbury Tales," and from the "Vision of Piers Plowman," and other contemporary writings in English, as well as from Froissart and Petrarch and Boccaccio, we may gather, directly or indirectly, the threads with which to weave a tapestried picture of the home life of the fourteenth century, without which as a background we can not visualize its life and occupations. Manly,³ for example, in his notes on the "Canterbury Tales," tells us many interesting facts about home life in Chaucer's England. Village houses were generally built by the man of the family with the help of his children and neighbors. Richer citizens in the large cities had frame houses, while the nobility and extravagantly rich merchants had stone houses or castles. Bricks were used little, if at all. London, which was then a mile and a half long and half a mile wide, at the time of the Black Death, in 1349, boasted forty thousand inhabitants, grouped mainly around St. Paul's Church, the spire of which, more than five hundred feet high, towered far above that of other churches.

The average house in London had two or more stories, the upper overhanging the lower, so that from the unglazed windows of the top stories slops could conveniently be thrown into the street below, which naturally became littered with all sorts of festering garbage and sewage, mixed with the carcasses of dead dogs and filthy straw from the great halls, so that the whole reeked with vermin and ordure. In the houses of the poor the family life was mainly spent in one room, as in earlier centuries. If lit at all, it was by smoking torches and by the chimney fire, where food was cooked. Children and dogs played on the floor,

¹ Weinhold: "*Die Deutschen Frauen in dem Mittelalter*," p. 219.

² Quoted by Abram, A.: "English Life and Manners in the Later Middle Ages," 1913.

³ Manly, J. M.: "Canterbury Tales," 1929 Introduction, Chap. IV.

while the mother carded and spun wool and wove the russet colored gowns which the family wore. From "Piers Plowman," we learn that lower class families were large, and rents high, and that their food consisted mostly of coarse brown bread, cabbage, home-made ale, sometimes milk for porridge, and perhaps a few mussels on Fridays. They had little meat except at christenings, on which occasions certain delicacies were presented to the mother, along with eight loaves of bread and a little wine.¹

Richer homes boasted silver spoons, a silver-mounted wooden bowl called a mazer, cups and plates of silver, glass, or wood. The diet of well-to-do people was much more varied than that of the poor; meat, eggs, fowl, cheese, and a few vegetables were often found on their long "boards." Their beds were fairly private and heavily curtained; the mattresses were of straw, the coverlets of feathers or quilted silk. They slept without night clothes except a cap, and at the foot of the bed was a strongly locked chest containing their treasures. A valet slept on a trundle bed at his master's feet.

The castles in England and on the Continent were considerably more comfortable than those of earlier times. Fireplaces in great chimneys in the wall were at least better than open fires in the center of the hall, and there were cozy seats in the deep windows. In northern Italy, in the valley of Aosta, for example, the rich lived in safety in strong stone towers surrounded by thick walls and a moat, over which hung a drawbridge. Inside the tower, on the ground floor, were rooms for the soldiers and servants. Wide stairways led to the chapel and to the living rooms of the family, where there was considerable comfort and beauty. Still higher were bedrooms, with frescoed walls and massive furniture.

In the French cities were many rich merchants, who built great town-houses. Paris, in 1328, before the Great Plague, had fewer than three hundred thousand inhabitants, and perhaps half that number after it. Several other cities had grown rapidly and boasted magnificent chateaux.

In Spain and Morocco even today we feel the atmosphere of the fourteenth century. In Toledo and Granada, in Meknes and Fez, are the well-preserved or restored palaces of the rich Jews and Moors of that day, which, like the Alhambra, have become more mellow and beautiful with time. In the courts of these mosques and palaces, in

¹ Gower's Works, edited by G. C. Macaulay, 1899-1902.

Cordova and Granada, we still see the exquisite gardens, fountains, and arcades of five hundred years ago, and so can visualize the life of these doctors and priests and merchant princes. The hospitals of the century, like the palaces, were more magnificent than were those of preceding centuries.

The people of northern Europe in this century had amusements—hunting the stag and wild boar, pageants and simple dramas to be acted out-of-doors, poetry recited indoors on rainy days by professional tellers of tales, and various religious festivities. Great banquets¹ were served, the *ménus* being adapted to the rank and wealth of the guests.² Receipt books handed down for generations gave directions for the preparation of elaborate meals—at which the chef sat with the guests, bearing a large wooden spoon with which he tasted each course as it appeared to prove it did not contain poison. At his belt hung the keys to his spice boxes, more precious than gold.

Froissart tells us that even when the people were sad because of wars and pestilences they applauded the tournaments lustily, had elaborate weddings lasting a week or more, and made spectacular shows of funerals. "All hearts were glad in April and May, when the meadows and pastures became green." Pictures of out-door life in the "Breviaries," "Books of Hours," and "Romances," show us gardens of delight, where men and women in gay clothing danced and sat on the turf eating picnic luncheons, or amused themselves by acting scenes from ancient writers.

Women of the lower classes were mere pawns in the marriage market, but even rich girls had little, if any, freedom to choose their life partners. Squires and knights sought youth and beauty, but even with these qualities there had also to be a suitable dowry.

In a little Book of Hours, *Tres Riches Heures*, written for John, Duke of Berry, is a picture which we may suppose to be typical of the period. Two such women sit spinning in an open doorway. They have bonnets on their heads, and their petticoats are drawn above their knees in order to warm their legs and feet at an open fire. They are evidently gossiping, watching the sheep and bees, while a man in the near distance chops down a tree. It is a homely scene and not an unhappy one.

¹ *"Le Viandier De Traillement"* (1326-1395) ed. Le Baron Jérôme Pichon et Georges Vicaire.

² Mead, William Edward: "The English Medieval Feast," 1931.

Another picture shows an interior of a house which is a veritable clinic where women are the doctors. One of these women is examining the head of a man, perhaps for ringworm or pediculi, another woman looks at a flask of urine brought by a servant. Other patients seem to be playing cards while waiting their turn for treatment. Privacy¹ was evidently no object to the patients, any more than to the bathers in the medicinal pools of this century. Cupping glasses and bleeding pans have their places on the walls of the room along with suits of armor, cross-bows, helmets, a powder horn, stirrups, and a drum.

Literature was reviving. Chaucer and Gower, and the author of "Piers Plowman," wrote tales and poems of various types; Froissart wrote history; Petrarch wrote platonic sonnets to his Laura; Boccaccio set an example to Chaucer in composing tales to be read aloud in winter evenings. There were also some women writing religious and poetic essays. Juliana of Norwich wrote her "XVI Revelations of Divine Love" before 1400. It was not much later that Dame Juliana Berners composed a treatise on hunting for the "Book of St. Albans," and perhaps it may also have been a woman who wrote the "Nut Brown Maid."²

The position of women has been called the test by which the civilization of a country or an age may be judged. Their position in law is one thing, their position in everyday life is another. From the diaries of the women of the Medici family in Florence and those of the Paston family in England, as well as from the instructions of the *Ménagier of Paris*,³ written for his child-wife, we see how busy and important were the women of the household on any large estate in the fourteenth century. They had the oversight of all the expenses, the care of the servants, sick or well, the selling of the farm produce, the weaving as well as shearing of the wool, and the making of the family wardrobe. Miss Power⁴ says that it was because there were so many more women than men that girls had to be trained to conduct the business of the estates.

¹ Carbonelli, E., and Ravasini, R.: *Commenti sopra alcune miniature e pitture Italiane a soggetto medico nei sec. XIV e XV*," 1918.

² Encyclopedia Britannica, 14th ed., vol. 8, p. 572.

³ The *Ménagier of Paris* wrote this book for his fifteen-year-old wife in 1392-1394. The Medici letters were commenced at the end of the fourteenth century, the Paston letters early in the fifteenth.

⁴ Power, Eileen, "Mediaeval English Nunneries," 1922.

III. MEDICINE IN CHAUCER, BOCCACCIO, AND OTHER WRITERS

TURNING now to the great writers of the fourteenth century, and their description of the medical life of the women of their own countries, we find Chaucer (1340-1400) representing the English, Froissart (1337-1410) the French, Boccaccio (1313-1375) and Petrarch (1304-1374) the Italian and southern French, and Christine de Pisan (1363-1431) working women in general, but especially those in Paris.

Chaucer gives us vivid pictures of the life of the women of his time in England.¹ In the "Nonnes Preestes Tale" a medical woman, Dame Pertelote, in the form of a hen, talks of the remedies for sickness and tells us when to find them. To her husband, Chauntecleer, the cock of the yard, she gives lectures on diet, personal safety, the prevention of sickness, and the remedies to be collected and prepared. These remedies, and her reasons for prescribing them, differ in no wise from those of the medical men of her day. For Chauntecleer's melancholy, Dame Pertelote picks certain herbs from her garden. For his tertian fever she gives him a diet of worms (because he is a fowl), along with cherry-laurel, centaury, fumitory, and hellebore. But, like most husbands of the time, he scorns her advice and regrets it when it is too late.

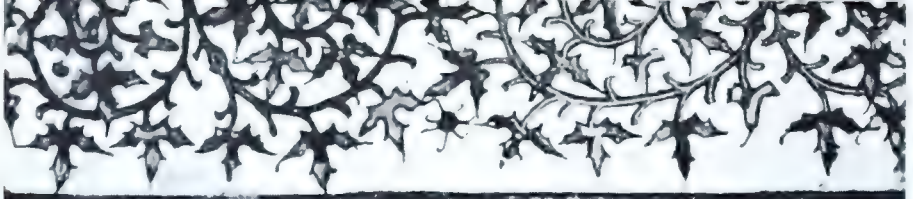
In the "Wyf of Bath's Tale" we find a most interesting insight into the life of an educated woman of the middle classes. This remarkable female had had five husbands. She was proud of this fact and of her own power over them. She says with mock seriousness:

And eek, I praye, Jesu shorte hir lyves
That nat wol be governed by hir wyves.²

She evidently respected those who vented their anger on her, and beat her, although in the end they submitted to her superior wisdom. She was a great traveler. She went to Jerusalem three times, once to Santiago di Compostella in Spain, and also to Rome and Cologne to see the relics of the saints. She had saddled her horse and gone alone to fairs and funerals and weddings and miracle plays, wearing her largest hat and her best scarlet stockings to preserve them from moths. What interests us most about the Wyf of Bath is that her husband had a considerable medical library, and that whenever he had leisure or vacation

¹ "The Canterbury Tales by Geoffrey Chaucer." Introduction, Notes and Glossary by John Matthews Manly. *Dame Pertelote*, p. 447.

² Ibid, "The Wyves Tale of Bathe," p. 308.



Et commencent Cent Balades. n.

CHRISTINE DE PISAN SITTING IN HER ALCOVE, WRITING.
(From Harleian MS, 4431. Courtesy of the British Museum. 14th Century.)

he read aloud to her in the evening. One of his volumes, Chaucer says, contained

.....Tertullan,
Crisippus, Trotula, and Helowys—
That was abbess nat fer fro Parys—

We can imagine that the Wyf of Bath, a middle-aged woman without children, had ample leisure from her weaving to visit fairs, and help her neighbors in sickness with her knowledge of the treatment of the diseases of women, which she had found in the old volume of Trotula.¹

In France, Christine de Pisan (1363-1431), writing somewhat later than Chaucer, described much the same conditions there as he did across the Channel. She was born in Venice in 1363, and died in 1431, the year of the death of Joan of Arc. Her father was Thomas de Pisan, a Bolognese physician and astrologer, already so famous in Italy that Charles V of France appointed him court astrologer. In 1370 he moved with his family to Paris, where Christine became an omniverous reader, spending most of her childhood in the king's library. She studied with the court tutors not only the seven liberal arts, but also medicine. At the age of fifteen she married the secretary of the king, Étienne du Castel, and together they read "all the books to be found." In 1380 the king died, and Thomas and Étienne lost their positions.

Christine at once began her literary career, writing so rapidly that by the time she was twenty-five, although then a widow and the mother of three children, she was able to support not only her own family, but her mother's family as well. She was a pacifist, a poet, and known in all educated circles of France as the one woman who dared to champion the cause of the freedom and independence of women. By 1405 she had written fifteen large works and many minor ones, among them the "*Dit de la Rose*" (1402), in which she advocates the formation of what we would now call women's clubs, for the collective protection of women and their advancement in education. She wrote several other books for women: *Épître au Dieu d'Amour*, *La Cité des Dames* (1407), and *Le Trésor de la Cité des Dames* or *Le Livre des Trois Vertus*. These books have long since been translated into other languages, and

¹ Hankin, in *Piers Plowman*, says, "I catch a fever that lasts a twelve month, until I despise the Leechcraft of our Lord . . . and not even the help of Dame Emma of Shore Ditch is of as much value as a certain charm." The title "Dame" may have been used as a sign of nobility. Evidently she was a popular physician.

should be in the library of club women of the twentieth century because of the light they shed on the history of the struggle for the emancipation of women from mediaevalism.

Christine's books rapidly became "best sellers," and were copied and recopied in beautifully illustrated manuscripts. She advocated the education of women: 1, in law, so that they might be able to manage their own estates; 2, in medicine, so as to be able to heal the sick and perform operations when needed; 3, in the use of money, so as to carry on their own households thriftily and spend public funds wisely for the good of the poor. She especially commends the study of medicine to girls, so that they may be able to care for the sick women and children of their communities, because (as translated into contemporaneous English) "there be maledyes conceyld by a patient with owtyen shewing her dysese to a man."¹

It is interesting to see how seriously Christine regarded her work. When she read the then popular "Romance of the Rose" she wept because all the women in it seemed "so foul and useless." She prayed earnestly to be changed into a man; but God answered her prayer by showing her in a dream a city of women in which all lived happily and ruled "by reason, righteousness, and justice."

Many manuscripts of the works of Christine exist, several with beautiful illustrations, in the British Museum. One of these, Harleian, 4431, on vellum, shows us pictures of Christine presenting one of her books to the queen,² and another to the king.

In another illustration a woman doctor sits by the bedside of a patient who is asleep in a semi-upright position against a high bolster. The doctor wears a tight hood and scarf, and a pink robe. The patient wears a nun's cap in her bed, which is partly hidden by white draperies. The floor has a green carpet.

Although Christine de Pisan had urged women to educate themselves to take a more dominant position, we read of the Knight of the Tour Landry commanding his daughters to be submissive to their

¹ Crump and Jacobs, op. cit. p. 421.

² Christine, clad in a long blue gown and wearing a very high, horned hat, kneels before the queen, whose head is crowned with a flowery but flatter horned cap, and whose gown of red and cloth of gold is trimmed with ermine. Four noble women and a nun look on admiringly. The lay women have blonde hair and caps like that of the queen. They wear green embroidered gowns. The nun wears a brown gown and seems to be watching the little dog gnawing a bone. The room is walled with blue cloth on which is painted golden *fleur de lis*. A canopied bed nearby is draped with red curtains.



CHRISTINE DE PISAN PRESENTS HER BOOK TO THE QUEEN.
14TH CENTURY.

husbands, and cheerfully to endure corporal punishment, which the Wyf of Bath also upheld as necessary on occasion. In the fourteenth century marriage was always a matter of family concern, and was often arranged in babyhood. The age of consent was seven years for a girl, who was marriageable at the age of twelve to a boy of fourteen.¹

Not long after the time of Christine Margaret Paston gave her daughter of twenty to a deformed man of fifty; and she tells us that she had to beat her daughter several times a week to make her submit to this marriage. Berdan says that girls were often sent in childhood to the homes of their future husbands to receive their education, as we have seen was the case of St. Elizabeth. Divorces were uncommon and difficult to obtain, but death in child-bearing was the common lot of women.

Petrarch (1304-1374) took up the cudgels against the absurd medicine of his time. He denounced the illogical treatment of disease as he saw it at Avignon during the great visitation of the plague in which his Laura died in 1348. He poured out invectives against the doctors and their pompous airs, their gorgeous clothes which hid their lack of knowledge, their ignorance of pathology and their pretensions to wisdom. Petrarch's love for Laura seems to have been purely platonic, for she was already married to Hugues de Sade, and became the mother of his eleven children. After her death Petrarch was crowned with laurel in Rome in 1341 for his immortal sonnets to her. Later he lived in France at Vaucluse, near Avignon, and in northern Italy at Arqua, where he died.

Boccaccio (1313-1375) wrote the hundred stories of the *Decameron* before 1353, although it was four hundred years before they were collected and printed together. In the *Decameron* a party of young ladies and gay young men, fleeing from the city to a country estate to escape the Black Death, entertain one another for ten days by telling stories.² This was also the literary device used by Sercambi of Lucca, the heroes of whose *Novelle* fled from the plague in his town, in 1374. Chaucer's twenty-nine or thirty characters spent about four days on their journey, instead of the longer period of Boccaccio's story-telling party. As a whole, the works, both of Chaucer and of Boccaccio, give a vivid picture of the manner of living of their time, but for medicine we must read somewhat between the lines.

¹ Abrams, op. cit., p. 114.

² Manly, op. cit., p. 75.

IV. THE MEDICAL ATMOSPHERE OF THE 14TH CENTURY

THERE were, in the fourteenth century, thirty-two chartered universities in Europe.¹ Of these, Oxford and Cambridge, Paris, Montpellier, and Bologna were the oldest, while those of Avignon, Rome, Florence, Vienna, and Heidelberg were quite young. The medical school of St. Cosmos in Paris, and those of the Italian universities, admitted laymen, but only those of Italy admitted women as students. Peripatetic teachers gathered from preference at Paris, where life was always more or less exciting. This was a source of satisfaction to the king, Charles V, because he was a chronic and psychopathic invalid, and delighted in a constant change of doctors. At one time a certain George of Prague cured him "by opening a vein in his arm" when he was morbid because his hair and nails had fallen out. At another time, when offerings, candles, and wax images of the king had been presented in vain at the shrine of St. Aquaire, William de Harseley, a friend of the Sire de Coucy, cured him of insanity due to a fright.

Charles V was a friend to surgeons as well as to doctors. In 1371 he confirmed the independence of barbers as distinct from surgeons; and this separation lasted in France until 1793. Charles V, moreover, permitted the anatomical dissection of the bodies of two criminals each year at the university, a great step in advance of the teaching of medicine and surgery in France a century earlier.²

New ideas were obviously lacking, and even in 1395 the medical libraries of all Paris contained only twelve volumes of a strictly medical character. One of these precious books, that of Rhazes, was so rare that the king himself had difficulty in borrowing it to be copied. Osler, (*"Incunabula Medica"*) tells us that the printed edition of Rhazes, the *"Continens,"* fills thirty volumes, and weighs twenty-one and a half pounds. We wonder how many men and how many years it would have taken to copy this work and the various commentaries on it. Celsus, Pliny, and Aristotle were the other authors most studied at Paris.

At Oxford in 1400 New College possessed the following medical

¹ Power, Sir D'arcy, Introduction to the "Treatise on Fistula in Ano," by John Arderne, 1911.

² Garrison, Introduction to the "History of Medicine," ed. 1914, p. 108, says, however, that public dissections were allowed in Montpellier in 1366; Venice, 1368; Paris, 1478; etc.

books: two copies of Galen, one each of Rhazes, Averroës, Hippocrates, Gilbert, Avicenna, Bernard Gordon, and Dioscorides, the "*Rosa Anglica*" of John of Gaddesden, and the "*Esculapii de Morborum Origine liber*" bound up with "*Trotula curandarum aegritudinum mulierum liber*."

Chaucer's own library of sixty books was a large one for his time (1340-1400). His Clerk owned twenty volumes, including a copy of Aristotle. It must be remembered that a book then must have cost as much as a house in town, since a scribe could copy only about 3,300 words in a day. Chaucer's "Doctour of Phisik" also had a good library for "He was a verray parfit practisour" (Prologue, line 422). And Chaucer adds:

Wel knew he the olde Esculapius,
And Deyoscorides, and eke Rufus,
Olde Ypocras, Haly, and Galyen,
Serapion, Razis, and Avycen,
Averrois, Damascien, and Constantyn,
Bernard, and Gatesden, and Gilbertyn.¹

The Doctour was also grounded in astronomy, i. e. astrology; and, says Chaucer, "therefore he knew the cause of every maladye," and so "he gaf the syke man his cure."

Despite the paucity of real medical education there was considerable agitation on the subject. Under Frederick II in Italy, laws had been passed as early as 1224 restricting the practice of medicine to those who had passed certain examinations, and in 1365 Joanna of Naples, the Queen, confirmed these edicts. It was not until 1352 that the French universities took up this matter seriously, when they made laws against the practice of medicine by other than university students who had received diplomas or permits. The term "*doctor*," meaning physician, was not used in Paris before 1413 (cf. Nicaise, op. cit., p. LIX). While the terms *physicus* and *medicus* were correct for medical men, the most popular names for a man doctor were *mire*, *mège*, or *mege*; for a medical woman, *mègesse* or *miresse*. The term *Physicus* seems to have denoted one who was proficient in Aristotle's physical sciences.

Some of the women who actually were employed officially as physicians or obstetricians were really appointed as sanitary experts or gynecological detectives to examine lewd women for signs of pregnancy. On the other hand, other women, who had studied "somewhat" of medicine, were refused a license, and punished if caught practicing for money,

¹ Manly, John Matthews, Prologue, II, 429-434, p. 160.

being listed as "*mulieres . . . ignari scientiae medicinae.*" Wandering doctors were also refused permits to practice. Persons who had not been recently confessed were not allowed to have a visit from any physician, though a barber was allowed to administer an enema or prescribe a laxative for such a patient.¹

In this dark period of medicine it is small wonder that epidemics raged. The apothecary shops were still filled with the most repulsive remedies. When inflamed eyes were treated with lotions of bile and the urine of infants, and deafness, lameness, and chronic skin diseases were treated according to the conjunctions of the planets, or not treated at all, it is no wonder that quacks plied a thrifty trade. Impostors and quacks were liable to heavy fines. They were also forced to ride through the town on horseback facing backwards, with a parchment, and a millstone or whetstone and a urinal, hanging from their necks. The parchment signified that the rider was too ignorant to write the magic words of Greek which were necessary to cure the disease he was attempting to treat.

As in previous centuries, the clergy were not allowed to treat certain kinds of diseases, nor to let blood, nor to receive money for their visits unless they gave it immediately to the church. A few of the less well educated monks or friars might visit the sick, but they were supposed to treat them only by means of prayers and relics. Moreover, any patient who had paid for a cure might demand his money back in case he was not cured. We find that laymen demanded their fees in advance in clothes, food, or coin, but the clergy demanded payment in gold if at all.

Punishment for failure to cure, on the other hand, was likely to be severe. When an itinerant eye surgeon undertook to cure the blindness of King John of Bohemia, and failed, he was thrown into the river Oder and drowned. When Pope John XXII died in 1334, his surgeon was flayed alive. On the other hand, a certain Mirfeld, a prior of St. Bartholomew's Church in London,² when cheated of his medical fee, became so depressed that he "went insane." It was he who said that one of his medical professors at Oxford rode forty miles to get the prescription of "an old woman doctor" for jaundice.

For the low state of medicine, the superstitions of this century were

¹ Franklin, "*La Vie Privée*" (*Des médecins*), p. 27.

² Flemming, Rev. Percy, "Late Mediaeval London from a Medical Point of View," 1929.

largely to blame. Even the most learned believed, with Dante, that a vital spirit in the heart controlled life, that the brain controlled the intellect and the will, while the liver controlled nutrition. The magic number seven was still a talisman. There were supposed to be seven elements in the body, seven healing remedies, seven forms of treatment by purges, evacuants, tonics, heaters, coolers, bleedings, and thinnings. Sometimes the cures were made by the uses of likes, and sometimes by opposites. Surgeons wrote treatises on medicine, and physicians wrote of operations.

Dante's "Divine Comedy" contains almost as many allusions to the medical theories of the century as are to be found in the writings of any contemporary physician. As a matter of fact, Dante belonged to the guild of physicians in Florence, which he had joined in 1297. He, like the medical women of the day, had probably studied medicine—Galen filtered through Avicenna—with apothecaries or private teachers belonging to his political party, although he was also a university man.

Dante tells us that in his time the Benedictines, who were medical teachers, were not expected to practice either medicine or surgery, although if it seemed necessary to operate for hernia or stones or cataract a churchman might do so, provided he temporarily adopted the short robe of the barbers. Those unwilling to do surgery fell back on the old treatments of Hippocrates and Galen for all diseases, together with the prescription of a journey to some holy shrine, and abundant faith in the relics of saints.

Dante assures us rather proudly that he saw Hippocrates and other ancient medical men in Hell (*Inferno* IV, 133-143). He even dares to contradict Galen's anatomy, especially the latter's theories of the arterial circulation and of the position of the heart.¹ He writes familiarly of epilepsy, the plague, malarial fever, and leprosy, but not as if he were himself a practicing physician. As to midwifery, he merely advises women to seek aid from the Virgin in childbirth. He mentions no women doctors.

His Beatrice was a well educated woman. As a memorial to her, her father gave their home in Florence to a society, under the care of a learned nun, for prevention of infant mortality. This building is still used as a foundlings' hospital, and we may still admire in it the beautiful medallions in blue and white tiles designed, five hundred years ago,

¹ Dernehl, P. H., "Medical Notes of the Divine Comedy of Dante Aleghieri," *Johns Hopkins Hospital Bull.*, Sept., 1911.

by Andrea della Robbia, in which each little swathed bambino extends its hands beseechingly for alms and sympathy.

The great *Gesta Romanorum*,¹ which had furnished tales for Boccaccio and Chaucer in their youth, gives a better picture than Dante of the part women played in the medical work of the period.

The women of the "Knights of the Round Table"² were always ready to tear up their petticoats or flowing sleeves to make a bandage for a bleeding wound. Sir Launcelot "made fayre Elayne to gadre herbes for hym to make a bayne."³

Atula cured Horn's wounds; the squire's beautiful daughter cared for the injured Gawain; the daughter of Guyon-le-Grise, Merote, gave to Gérard many kinds of treatment in order to cure him; the "ladies of Salerno" healed Estien de Valprés; and the damsels in the Tristan stories applied plasters of egg-white and fennel and salt and plantain leaves to an infected wound. The women of these stories gave their patients mandrake for pain (compare the Parzifal episodes); and with this for a narcotic they even enucleated cataracts from the eyes. Isolde is mentioned sixteen times in the English versions of the Tristan legends as having both medical and surgical skill.

V. MEDICAL WOMEN OF ENGLAND—14TH CENTURY

WE know the names of very few of the women who practiced either medicine, midwifery, or surgery in England during the fourteenth century, but we do know that it was for such women that various *Concilia*, or case records, were written in English, and at least one translation of Trotula's book from the Latin. This was prepared "so that oon woman may help another in Sykenesse."⁴ We also surmise, from the establishing of certain new laws, that laymen, women, and barbers were a considerable worry to the masters in medicine. In London, for example, in 1390, four surgeons were sworn before the mayor to follow their calling faithfully, and to make scrutiny of others, *both men and women*, who were undertaking cures or practicing the art of surgery.

Eckenstein (op. cit., p. 379) tells us that during this century the

¹ Crump and Jacobs, op. cit., p. 160.

² Mead, William Edward, "Selections from Sir Thomas Malory's *Morte d'Arthur*," 1897, pp. 266-300.

³ Manheimer, G., "*Etwas über die Aertze in alten Frankreich*," 1890.

⁴ Crump and Jacobs, op. cit., p. 421.

nunneries were well, though rather extravagantly, managed. The prioress had her own house and secretary and servants, the cellaress was trained to do the buying and preparing of food, and the infirmarian took entire charge of any ill.¹ Occasionally we read of a prioress who was a specialist, in the treatment of eye diseases, for example; and there is a record of a certain laywoman, Alice Sheoyngton, once a servant in the family of a rich man, who travelled around as an itinerant eye doctor. She seems also to have had a reputation for curing smallpox, and preventing its pitting, by means of the red cloth treatment advocated by Gilbert and Gaddesden. There seem to be no records of women who were prosecuted for such practice, although edicts were issued against it. Public executioners, moreover, were allowed to set bones, barbers to cup and bleed, and bath attendants to treat skin diseases.²

Notwithstanding the popular dislike of men doctors for women practitioners, there were even times when men resorted to the remedies of "old women" and barbers to help their patients. Take, for example, the previously mentioned case cited by Mirfeld, a physician connected with St. Bartholomew's hospital, where one of his professors at Oxford rode forty miles to get the prescription of "an old woman" for jaundice. He also adds that it was necessary for prioresses to understand the diagnosis and treatment of diseases in order to know whom to admit to their hospitals as patients, for lepers, permanent cripples, the blind, thieves whose hands had been cut off, and foundling children were not received. Mirfeld also added that prioresses must have studied a certain amount of astrology, in order to know by the conjunction of the planets when to bleed their patients.

It is interesting to find that before the close of this century, a few women were recognized as surgeons by the Guild of Surgeons, founded in 1389, and openly acknowledged as necessary for the care of the sick and wounded wherever they might be found. Relics of saints were obviously not purchasable by the poor, nor were long journeys practicable; but, because of the increasing demand for them, the monasteries bought the alleged bones, hair, and teeth of anybody called a saint. We read, for instance, of a rib bone of St. Wolstan, and a splinter from the cross of St. Amphibalus, being bought by one abbey at enormous expense, "*expensae hoeribiles.*"

¹ Neuburger, vol. II, p. 109.

² Moore, Norman, "History of the Study of Medicine in the British Isles," p. 109.

The morality of the religious houses was, during this period, becoming lower and lower. When Queen Isabella, the "she-wolf of France," widow of King Edward II, passed through St. Albans one day in 1327, she was almost mobbed by the women of the town who flocked around her carriage with their illegitimate babies, demanding that she protect them from the monks, who were their fathers.¹ Queen Isabella understood so little English that she was obliged to hear their tales through an interpreter; but she ordered the guilty monks to be punished. The affairs of this abbey went from bad to worse, until it was suppressed in 1509, by order of Henry VIII.

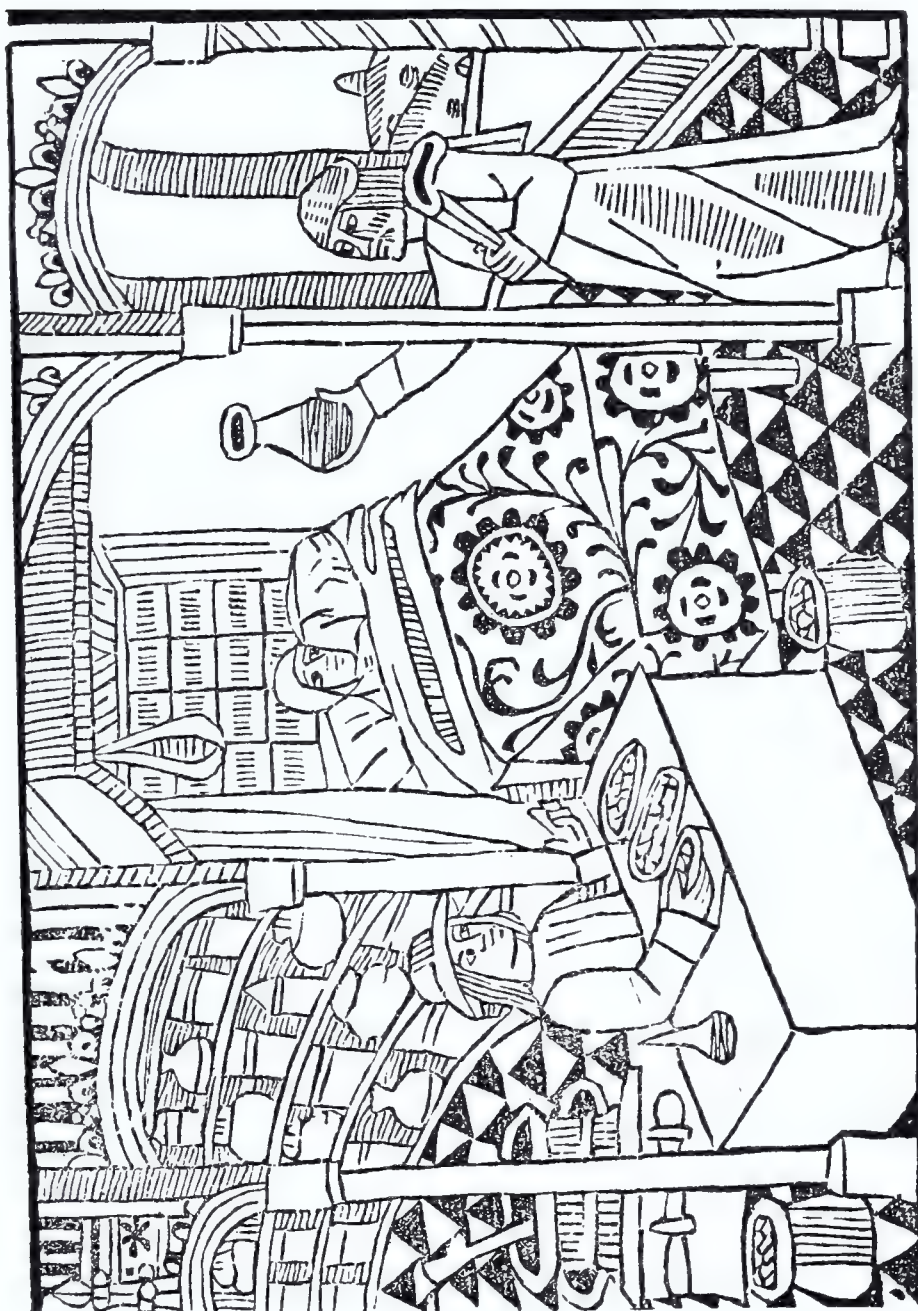
Although there were no men midwives in those days, occasionally the Franciscans studied obstetrics, along with other medical subjects, and taught it to women.² An Italian abbot named Farecius, who became abbot of Abingdon in the time of Henry I of England (1100-1135), was supposed to be so skilled in obstetrics that he was asked to attend Queen Matilda in childbed. For doing this the Pope refused to create him archbishop. He then attempted to open a medical school at Malmsbury and to treat diseases of the skin with Saint Gregory's balsam, taken from St. Anselm's tomb.

By the fourteenth century such practices were no longer even tolerated, and Queen Philippa (1314-1369), wife of Edward III, employed a "female Court Surgeon," Cecilia of Oxford. Philippa herself was unusually well educated. She guided the entire education of her twelve children, among them the Black Prince, and helped her daughter Mary to found Pembroke College at Cambridge. She also founded Queen's College at Oxford, built hospitals, worked for peace, and was universally beloved in Holland, her native land, as well as in England and France. We might wish that Queen Philippa had insisted on the entrance of women as students at Oxford or Cambridge, but that was no more possible in the England of the fourteenth century than it was in France during the previous century.

Very little of value to medical students was included in the curriculum of the English colleges at that time, and no opportunity for research. The medical practice of a man doctor was limited to a glance at the patient's urine, a touch of his pulse, a prolonged residence at the

¹ The chronicler tells the story in Latin: "*Subornaverunt uzores suas et quasdam villae pellices ut occurrant, nudatis pectoribus cum lactentibus pusiolis, reginae Isabellae egredienti de monasterio, ad infestandum eam clamoribus importunis, et mentiendum quod hi essent pueri quis monachi de eis generaverunt eas violenter opprimentes.*"

² Bateson, Mary, "Medieval England," 1904, pp. 76, 241.



A MESSENGER BRINGS A SPECIMEN OF URINE TO THE APOTHECARY
 (From *Bartholomeus de Glanvilla*, 14th Century)

house of the patient in a surgical case, and the presentation of a large bill at the end of the sickness. Women and barbers received lower fees, made frequent visits to rich and poor, did manual work for the patient's comfort, treated cripples by the roadside, and cleansed festering sores. Though they might not be able to read Aristotle, they were able to comfort, and often cure, their patients.

In 1380 the prior of St. Bartholomew's hospital prepared a breviary, or casebook, for his nurses and doctors. Four sisters and eight brothers were continually on duty. Their treatment of patients was determined by themselves, although once a week they were visited by a master physician or surgeon as consultant.

We have already seen a list of the medical books which Chaucer's Doctor of Physic had read, and we may suppose that other well-to-do men or women had access to these same books, some of which were illustrated. In one picture a woman in a black dress and cap is cupping another woman under the breasts and on the abdomen. In another a man is being cupped in seven places by a woman. The rules for cupping were well known. Placed on the head, cups would prevent the hair from turning gray and abolish spots before the eyes; placed under the chin they cured acne and rosacea and ozena; under the umbilicus they "helped suffocation of the uterus and 'aking' of the colon and womb"; over the hips they cured menorrhagia; above the shoulders they produced menstruation; in fact, cups were used for almost every kind of pain or disorder. Numerous pictures exist showing the "phlebotomy man," or the cauterized man, with the places indicated for cupping to produce different results.

VI. MEDICAL WOMEN OF FRANCE--14TH CENTURY

IN France conditions were much the same as in England. In both countries streets were narrow, sanitation nil, country roads abominable, and the houses of the poor pitiable. People went about on foot or on horseback, or in covered litters.

Although Paris had more than two hundred thousand inhabitants, it had only ten regularly licensed doctors, besides thirty-eight men and women known by name, paying taxes, but practicing medicine illegally. Even by the end of the century only thirty-two doctors were licensed to practice in Paris; and they were under very heavy taxation.¹ One man had been refused a license because he was married, and especially

¹ Franklin, A., *"La Vie Privée d'Autrefois,"* Chap. 8, *"Les Médecins,"* 1892.

because he had married a widow. In 1352, however, King John the Good legalized the practice of medicine by specially qualified women,¹ (an example which the surgeons of England² followed in 1372). Under a law which had been enacted in 1311 women who could pass an examination before the master surgeons, "*magistri chirurgici jurati*," of the Corporation of Paris might be permitted to practice surgery. By 1352 this law was almost a dead letter, for many men as well as women were ignoring the examinations. Du Bouley³ tells us that both the dean and the faculty insisted that King John's new laws should apply to both sexes. "*Utriusque sexus, mulieres que aliquae et vetulae venientes ad villam Parisiensem gratia practicandi.*" Guy de Chauliac, however, was for prohibiting women from practice on account of their sex, "*secta mulierum et multorum idiotarum.*" Even with him, however, was no question but that the "*ventouses*," or *chirurgica*, should be permitted to bleed, administer herbs, make elixirs, reduce fractures, and attend midwifery cases.⁴

Even in this century there was little opposition to the traveling physicians, so-called, who spread out their wares in the marketplaces or at fairs, and earned what money they could by imposing their remedies upon the gullible public. In Montpellier, at least, no restrictions were placed on the teaching of medicine by any man or woman who felt inclined to do so; and as late as 1326 Sarah of St. Gilles, a Jewess, was carrying on a large private medical school in Montpellier.

In the south of France, at Avignon, while the popes were there, (1305-1377), the laws against irregular practitioners were somewhat more strictly enforced. "*Mulieres et vetule et conversi et rustici, nonnulli apothecarii, et herbarii quam plures, insuper scholares in medicinae Facultate nondum docti. ignari scientie medicine, ignorantesque complexionem hominum,*" etc.⁵

¹ At the same time all "ignorant persons" were prohibited from administering any medicine, alterative or laxative, pills or clysters. *Ordonnances royales*, T. II, p. 609.

² South, Sir James, "Memories of the Craft of Surgery in England," 1886.

³ Du Bouley, "*Histoire de l'Univers.*" T. IV., p. 672. Chartul. T. I.I., No. 434. The Edict of 1311 reads as follows: *Edicto praesenti statuimus ut in villa et vicecomitatu praedictis, nullus chirurgus, nulla ve chirurga artem chirurgiae seu opus quomodolibet exercere praesumat . . . prius examinati fuerint diligenter et approbati in ipsa arte, etc.* Quoted also by Nicaise, p. 64, "*La Grande Chirurgie de Guy de Chauliac*" (originally written in 1363). (1890).

⁴ There was a "midwife doctor" named Perette, born about 1360, the victim of a trick played on her. She was imprisoned, but pardoned by Charles VI "because she was as necessary to the nobility as to the bourgeois."

⁵ Franklin, op. cit., "*Les Médecins*," p. 28.

Somewhat later in the fourteenth century a law was passed permitting master physicians to marry. By 1395 there were thirty-four married masters in Paris, although in 1332 such marriages had been strenuously fought by the Faculty at the University of Paris. During the entire century the popes and the kings quarreled constantly for supremacy over the Faculty, not only in France but in all the other countries of the Empire. Most of the physicians appointed to care for the families of the kings were canons of the church, with the title *summus medicus*, and they were celibates. Towards the end of the century, however, a widower might become a canon and might study medicine, but not if he dared marry again, and especially not if he married a widow.

In 1352 King John the Good signed another edict against physicians who defied these laws, and before the end of the century Guy de Chauliac, a surgeon, openly complained of men of the short gown (i.e., of the medical school of St. Cosmos), who dared to wear the long gown and undertake major surgery. He also complained of the medical women who gathered and prescribed herbs for sickness,¹ for, said he, many idiot women were practicing a sort of religious nonsense, recommending patients to pray to special saints for cures rather than relying on poultices or ointments, or the use of wine in their surgical dressings.

When the names of men or women counted so little historically, it is not remarkable that few except those of the writers of books have come down to us. Perhaps it is as well that the medical women of the period did not write books, since those written by the men of this time are relatively unimportant. Even the practical work of women in midwifery was not as well done as in the old days at Salerno.

There were, however, *mirresses* in France who inherited the mantle of Queen Blanche, and founded hospitals in which they "tended the sick with loving care." Alice Kemp Welch tells us that a certain Mahout, Countess of Artois, a great-niece of Saint Louis and mother-in-law of the kings Philip IV, le Bel, and Charles V, went to Paris in 1302 to consult the scholars as to the best architecture for her hospitals, and to study medicine with the best medical scholars while her thirty lazarettos and eighty hospitals were building.

All of these institutions were under her personal jurisdiction, besides two others in Burgundy and Artois to which she devoted most of her time. The hospital nearest to her castle had one large ward, 160

¹ Chauvin, Jeanne, "*Étude Historique sur les Professions Accessibles aux Femmes*," 1892, p. 107.

by 35 feet in size. Its walls were 16 feet high. Its roof was gabled, with large windows at either end. The sick were laid on soft cushions beside the open windows on sunny days. Provision was made for a special ward for confinement cases, a chapel, a kitchen, a room for the matron, and a room for herself whenever she chose to use it.

Mahout was a great linguist, and when she died she left a library to the hospital, including valuable medical books. For the preparation of remedies the Countess relied upon a woman of Paris named Perrenelle,¹ who understood how to prepare all the native herbs. In one of Mahout's manuscripts we find most interesting pictures showing the contemporary ways of setting bones, how to "lay hands on" the sick, etc. The largest picture on the walls of the ward, as well as in her book, depicted the scourging of Christ—a lesson in patience for the sick. The Countess Mahout died in 1329 from over-bleeding, a not uncommon result of this form of treatment in those days. Whether she had built these hospitals in order to gain absolution or from less selfish motives, her good deeds long outlived her generation.

Among the few other French medical women in this century known by name is a Jewess, a native of Florence, Jacobina Félicie, who was practicing medicine in Paris in 1322. She was prosecuted for practicing without a license, but was defiant of the authorities, calmly paying her fines time and again. Finally she was brought to court to be judged; but seven witnesses testified to her great skill, and the popular demand for her release was so insistent that the prosecution was withdrawn. She was, however, warned once more to stop practicing, although Dominus Odo, and Frater domus Dei Parisiensis, and Maître Martin, and "*plures alii*" declared that she had cured patients who had baffled the skill of all the Paris *magistri*.² Fontanges says that she had studied medicine with a master like the married men who could not attend the university, and although she was not expected to charge any fees, she was given beautiful presents by her rich patients.

Another excommunicated medical woman who continued to practice was Clarisse of Rotomago, or Rouen, who in 1312 came under the ban of the prior of Saint Geneviève. He also excommunicated three or four other women between 1322 and 1327—Jeanne Converse,

¹ Franklin, op. cit., 1887, p. 26, quoting from J. M. Richard, "Mahout, Comtesse d'Artois," p. 155.

² Crump and Jacobs, "Legacy of the Middle Ages," 1926, p. 442. This story is also repeated by Eileen Power, and by Harriet Fontanges (p. 257). Lipinska, pp. 119-123, quotes these names from the Chartul. Paris, II, 149-153, 255-257, 285.

Clarice Cambrière, and others. All these women were practicing without a license. We can not but wonder how many others were doing the same thing, but without so much notoriety.

It is interesting to find Boccaccio (1313-1375) bringing a French medical woman into his tales. In the story of the third day of the "Decameron" he tells us of *La Femme Courageuse*, Gilette, the daughter of a physician named Gérard of Narbonne. After the death of her father, Gilette took charge of his patients, and cured the king of France of a fistula. Boccaccio calls her a *Donna Medica*.

VII. MEDICAL WOMEN OF THE 14TH CENTURY ELSEWHERE IN EUROPE

Germany

IN Germany during the fourteenth century there seems to have been more leniency than in France toward women who practiced medicine without a license. It is just as difficult, however, to find their names. German medical men were not writing books. A specialist in wound surgery, Meister Hermann, is known only because he was in the army, a distinction denied to women.

In Mainz in 1288, there was mention of "a medica"; but, during more than a hundred years after that time, we find the name of but one other woman in Mainz, "Demud, *Medica*," and nothing definite concerning her work. As with the inscriptions on the Greek tombs, we have only a name. In 1351, however, a famous woman oculist, Ulricha de Foschua, was living near Munich and this much we know only because a grateful patient willed to her a stone house and a garden.

That women surgeons were recognized in both Poland and Germany is shown by a story of the Emperor Sigismund, who in 1406 appointed women rather than men on good salaries to tend the poor. He had found that the *Magistri in Physica* refused to go into the homes of the poor, or to treat anyone gratuitously. "Hence," said he, angrily, "let them go to Hell," and it was for this reason that he upheld the women.

On the other hand, one of the most famous French surgeons in the early years of the century, De Mondeville, rebelled against treating patients for nothing because so many were impostors. Others, he complained, paid in ducks and fowl, sent meagre presents, or held themselves "friends or relatives who expect no bill," and "never intend to



A WOMAN TEACHING ANATOMY TO HER CLASS—14TH
CENTURY

(Illustration in an old mss., probably German.)

pay." He adds, significantly, that some pay in advance in order to be kept well, but he continues, "*saepe fides data fallit, plegius plaidit, vadium valit.*"

In 1394 fifteen medical women were licensed to practice in Frankfurt-am-Main, a free city on the border between France and Germany. Three of these women were eye specialists, one of whom, Marguerite of Naples, became court physician to King Ladislaus. There was also a noted woman surgeon in Frankfurt, the daughter of Hans der Wolff, who drew patients from far and near. She had learned her art from her father, whom she excelled in the nicety of her operations. Several medals were awarded her for her treatment of soldiers injured in war, and evidently she was outstanding among the women of her time.

In 1397, according to Schultz, there was a certain Hébel, *Médecienne*, who was a noted physician, and undoubtedly many others, Jews and Christians, "exercised their art" in that large and important city, for there is a general reference to medical women there as follows: "*Die Frauen aber verstehen nicht bloss die Wunden zu verbinden, sie sammeln auch im Walde de heilkräftigen Kräuter und stellen die Salben und Pflaster selbst her.*" Now and again, when old tombs of fourteenth century women are opened, there comes to light among the bones and dust of a once busy doctor, a precious medical book, or perhaps only a few loose pages of such a book, buried with her body in holy ground as her most precious possession.

A few further words concerning the treatment of the insane in all parts of Europe during the Middle Ages may not be out of place here. They suffered the most inhumane treatment. Some were chained to trees out of doors. Others were tied into cold stone cells and left without food, clothes, and drink; or they were beaten to exorcise the demon which had entered into them. Hospitals for the insane were few and poor. There was one in Metz as early as 1100, one in Elbing near Dantzic in 1320, and one near the Tower of London in 1371; but, while it was considered meritorious to be kind to lepers, it was thought to be the duty of all Christians to treat the insane as harshly as possible. The sole exception to this belief is said to have been in Saragossa, Spain, where, even in 1425, the insane received some sort of kindly treatment.

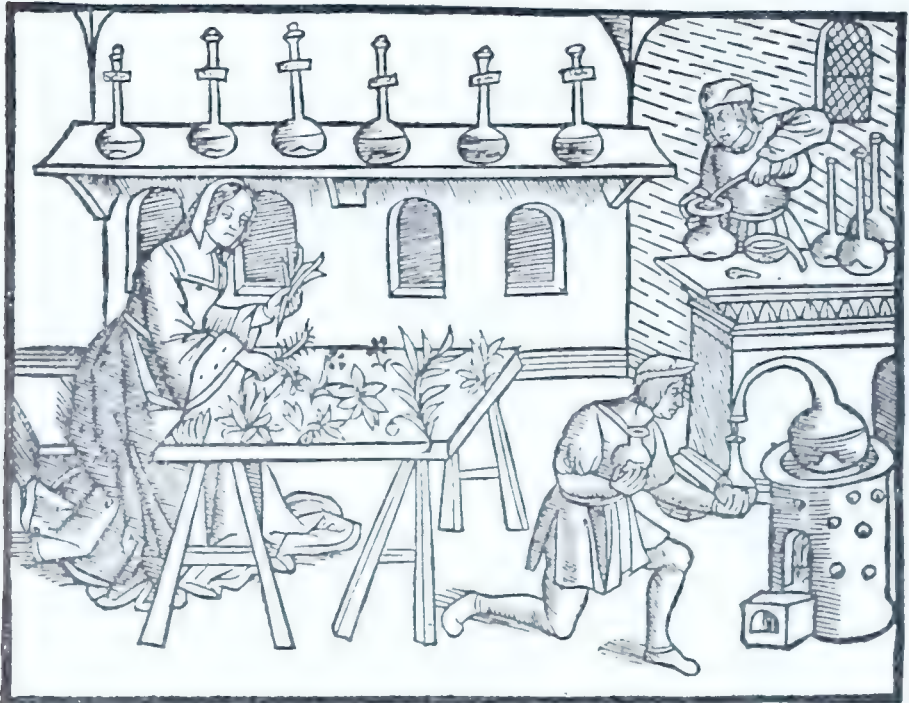
Poland

In Poland several noble women were practicing medicine at this time, among them, in Cracow, Catherine, *Medica*, and Elizabeth, sister of Casimir the Great, who became the wife of Charles I of Hungary.

It was she who invented a famous cure for rheumatism called the "Water of the Queen of Hungary."¹

The Low Countries—Belgium, Flanders, Holland

We have seen in a previous chapter that during the thirteenth century a religious sect of women called Béguines, originating in what is now Belgium, devoted themselves to the study of medicine and the care of the sick in their homes. This sect soon spread throughout cen-



AN ABBESS AS PHARMACIST—13TH CENTURY

tral Europe; and, while resisting all efforts to bring them into closer subordination to the Church, its members continued to carry on their eleemosynary work, and in a quiet and unassuming way did an untold amount of good. They were called *piae mulieres* and *sanctae mulieres*. Recruited from all classes of society, the Béguines willingly obeyed the rules of the Order, and formed small groups who lived in separate houses but worked with a common purpose.

¹ Its formula was as follows: Aqua vitae 3 parts, rosmarin 2 parts, to be heated together for fifty hours and then distilled. The dose was one tea-spoonful taken with food and drink. This remedy was also used externally.

The Countess Marguerite of Flanders and of Constantinople in 1241-1244 did her utmost to bring these Béguines under the power of the Pope. Although this was not accomplished, he did succeed in imposing upon them a *silentium perpetuum* as to the ownership and rule of their property, and this satisfied the countess. The Synod of Vienna in 1311, however, condemned several of their so-called "errors," and seven years later, certain members were accused of heresies and punished severely. This, however, seemed to end their persecution, and even the Reformation of the sixteenth century left the Béguines in peace to carry on their works of medical charity and mercy quite unmolested. In pictures representing their private or hospital work we see them bending over beds in each of which one to four patients lie. Above each bed hangs a crucifix, and by each bedside is a table on which is a urinal along with a comb and some bread.

While the Béguines were thus endeavoring to provide for the sick and infirm in Belgium, a powerful puritanical sect called Lollards were crying out both in the Netherlands and in England against the wealth of the Church and its abuses, and the need of reform. The Lollards lived simply, followed the teachings of Christ, and included medical work in their régime. Though having more independence than the Béguines, they also visited the sick, treated lepers and patients having smallpox, and did what they could for those dying of the plague. In pictures of the Lollards their men can be distinguished from their women only by their beards.

Austria and Hungary

Conditions of medical practice must have been as unprogressive in Austria and Hungary in the fourteenth century as they were in the other countries of Central Europe. But, though their medical women were not outstanding, their existence is recorded. In pictures of old apothecary shops,¹ it is women, as a rule, who seem to be preparing the medicines and directing the work. At the Council of Vienna in 1312 the following significant law was passed:² "In the future the 'laity' *only* shall superintend the hospitals in order that the sick may be cared for more decently." In a Silesian document of 1353 a distinction is made between *kunstarczt*, *wundarczt*, *vrowen dy do wassir beseen* (i.e. examine urine) and *apotheker*. In another manuscript there is a defini-

¹ Bayle, John Peter, (1647-1706), "*Biographie Médicale*," translated edition published in 1855.

² Baas, Handerson translated, 1889, p. 330.

tion of the different classes of medical men and women. For example: "a physician is one who gives sour and bitter drinks"; "a barber is one who dresses and cuts wounds." Evidently medical teaching in Austria and Hungary was poor. Not until the time of the Empress Maria Theresa do we find the medical school in Vienna taking rank with those of Italy and the West.

Jewish Medical Women

Although under the ban of the Church, many Jews, both men and women, were practicing in Europe during the fourteenth century. Jewish women's names appear frequently in various archives as oculists, and as *femmes honnêtes* who practiced medicine. These Jews seem to have been preferred as doctors by both churchmen and royal personages, although their employment was necessarily kept secret. They were great students, perhaps the most learned men and women of their time, and for this reason inspired confidence in their patients. Moreover, they were benevolent—at least to the members of their own race, were more moral than the Christians, and more hygienic in their daily life. They were not in favor of promiscuous bathing, and were against the excesses of all kinds that usually follow the wars and pestilences of the period.

But, for all that, for various reasons, edict after edict went out against them. In 1415 Ferdinand of Aragon decreed that "no Jew, male or female, shall practice medicine among the Christians,"¹ whereupon they continued, as formerly, to practice in secret, only demanding higher fees for their cures. There was an Antonia Daniello, *Eprea mediche*, who was highly honored by the faculty of the medical school at Florence, and given the position there as *registra* from 1386 to 1408.² There was a Jacobina, *Medica filia quondam Bartolomei*, who practiced in Bologna in 1304, and another Jacobina who practiced in Florence in 1348, at the time of the Black Death. Probably many of these Jewish women had studied medicine at Salerno, where Rebecca Guarna and Mercuriade were among the teachers.

Italy

Fortunately, the names of many of the medical men and women of the different cities of Italy have come down to us, saved miraculously from the oblivion that overtook many of those who practiced in the other war-ridden countries of Europe in the fourteenth century. This is

¹ Neuburger, Max, "*Geschichte der Medizin*," 1906, vol. II, p. 114.

² Burckhardt, "*Die Cultur der Renaissance in Italien*," 1869, vol. I, p. 363.

probably one result of the fact that Italy led the world in medicine during the fourteenth century. Because her universities were never closed to women students the medical schools at Salerno and Bologna continued to draw both men and women from every civilized quarter of the globe.

In 1321, Charles, Duke of Calabria, signed a decree that medical women only should attend women when they were ill as well as when they were in labor. As a result women studied all the subjects studied by men students, besides memorizing the work of Trotula, Galen's "Anatomy," and the *materia medica* of the Arabs. Charles, in person, licensed a certain Françoise, wife of Mathieu de Romana of Salerno, giving her the right to practice surgery, "because women needed surgeons of their own sex."¹

A fourteenth century manuscript of the *Circa Instans* of Platearius notes that the women of Salerno were "at present" using new remedies such as cyclamen for papillomata of the genitalia, calamint as a uterine stimulant and astringent, and a new preparation of poppy juice for pain. Among the famous women doctors in Salerno at this time was Rebecca Guarna. She paid large rents for her offices, and "knew all medicine, herbs, and roots."

In Bologna there were generally women on the staff of the university. Among the more famous of these was Dorothea Bocchi,² who in 1390 was appointed professor of medicine and moral philosophy, succeeding her father; she taught for forty years. Bologna at that time was crowded with students.

Another famous woman in the university was Alessandra Giliani, who died in 1326; she was assistant to the great anatomist Mondino. She won the admiration of the students for her skill in injecting the veins and arteries of a cadaver with hardening fluid in order to demonstrate them more clearly. In some copies of Mondino's anatomy is a picture of a young woman with flowing hair who is standing beside the table on which is a cadaver whose abdomen she has opened in order to demonstrate each organ as Mondino names it. He, as the *magister*, sits on a high stool above Alessandra. She is said to have died of blood poisoning, and her husband, who was also an anatomist, died soon after of pulmonary trouble. They are honored by being buried beneath a monument in one of the churches in Bologna.

¹ Lipinska, pp. 99-107. Royal Archives of Naples, 1321-1322. A. 240.

² Mazzetti, S., "*Repertorio dei professori di Bologna*," 1848, p. 59. Also Lipinska, p. 151.

In the Archives of Venice we find the name of another famous medical woman, Beatrice *medica*, widow of Gherardo of Candia. In Padua there was Adelmota, wife of James, Prince of Carrara, who flourished between 1318 and 1324. Rhodius says that she was a most learned physician.¹ "*Magna sane laus a medico claro et docto profecta,*" and "*consultandi prudentia medendique arte Patavii rariori exemplo, eminuit Adelmota Maltraversa, Bonitraversi Maltraversi comitis Castri novi filia, uxor Jacobini VI.*"

The story of Adelmota has been doubted by Harless because he could not find her name in any record, but we may well believe that Rhodius of the seventeenth century had access to records unknown to us in the nineteenth century, especially as he was from Padua himself. Many witnesses testified to her skill as an obstetrician, "*quae difficilem partum expertae sunt ut Plato inquit.*" Rhodius also mentions Joanne Serrana as saying, "*Jam vero nonne et ipsae obstetrices remediis datis et carminibus possunt portas exsuscitare, et fasciliores si velint, reddere.*" There was also at Padua Laura Cereta Serina, a professor of philosophy (which term generally included medicine) and six other medical women known by name.²

In Turin we know there was a Leonetta, wife of Jean de Gorzano, recorded as a famous *medica*; and many other names of medical women have been found in the archives of northern Italy.

In southern Italy were still others. In Naples, for instance, we find mention of Tomasia de Matteo de Castro Isiae, and Maria Incarnata, two surgeons who were given extraordinary privileges, "*privilegium chirurgiae medicandis vulneribus et apostematibus in quibus inventa est expers et sufficiens.*"³

In Florence, at the Hospital of Santa Maria Novella, are preserved several prescriptions signed by Madonna Caterina, *Medica di Casa*. She was probably the resident physician. In Siena, at the Hospital della Scala (said to have been founded in 898 by a woman named Soror), there were in the fourteenth century many followers of Saint Elizabeth and Saint Clara, each of whom had established nursing Orders.

¹ Rhodius (1587-1659), Chap. CXXII, p. 194. Quoted by Lipinska, pp. 148-151.

² They were Zuffira Ferretti, Maria Petruccini, Mona Segà, Leonetta Medica, Novella Calderone, Madelena Buonsignore. Malacarne, "*La Medicina in Italia negli ultimi tre secoli,*" p. 13, ed. A. Chiapelli. See Lipinska, p. 148.

³ Renzi, "*Storia della Medicina in Italia,*" II, p. 348.

The most famous medical saint of this century was, however, Saint Catherine of Siena, daughter of a tanner. She was born in 1374, in a little house which still stands in a narrow street on a hillside. By the time she was twenty years old she had become a devoted Dominican, had received stigmata, and was ready to devote her life to the care of the sick, especially those who had the plague and other contagious diseases. Even as a child she had patiently dressed the sores of lepers, and had forced herself daily to wash and cleanse the ulcers of an old woman who was dying of a bad smelling cancer. In 1372 she cared for victims of the plague for an entire year without taking the disease herself. She died in 1380.

Scandinavia

The great medical saint of the Northland, Bridget or Birgetta, was born about 1304. She was the daughter of a prince, and married to the reigning king when very young. After she had had seven children she and her husband abdicated and took vows of celibacy. She then began to build hospitals, and to found nunneries where women might learn to care for the sick, and, like herself, devote themselves to lives of mercy and charity.

Her own home was at the castle of Wadstena, in East Gothland, which still stands as solidly as it stood when she was young. There, above the blue water of the lake, she also built a nunnery, and there she died in 1373. She had been educated in the arts and the law as well as in medicine; she had traveled to Rome and Jerusalem. The story of her meetings with all the most interesting men and women of her day has been recorded in the *Genealogia Brahea*, which can be read today in the library at Stockholm, together with her *Admonitions* to her son. She was sainted by Pope Boniface IX in 1391. Her day is October 8.

Saint Bridget, like her contemporary, Saint Catherine of Siena, often went to Avignon to consult the Pope on matters pertaining to her religious houses. Her fame at length spread to England, where the monastery at Sion, an old foundation, was reorganized in her name and soon outdistanced every other monastery in England in wealth and benevolence. It became a great medical and teaching center, and was one of the few allowed to remain after the general sweep of the Reformation. The excellent medical work done by the earlier monastery

¹ Eckenstein, "Woman under Monasticism," p. 384.

at Sion has already been mentioned; after the time of Saint Bridget, it became the best medical training school for women in England.

A little before 1350, Bridget censured the reigning prince, Eric of Scandinavia, for certain irreligious acts, and foretold tragedies which were to come to his family. For this she was in a sense exiled, and went to Rome, where she lived for twenty years.¹ Then she censured the Pope for remaining in Avignon, and this made her so unpopular in Rome that she again returned to Sweden, where she settled down with her companions to translate the Bible into Swedish. She died in 1373 before the work was half done. Her communities consisted of sixty women each, with thirteen monks to represent the Apostles, and four deacons to represent the great doctors of the Church. There were also eight lay brothers to do various kinds of work. All were ruled by an abbess.

It was because of the marriage of Philippa, daughter of Henry IV of England, to Eric XIII in 1406 that Bridget's influence became so paramount at Sion. It was also because of Philippa's wealth, and that of her relatives, that so many Sion daughter houses were built and richly endowed. Rules for the nuns and monks of these monasteries fill fifty-nine chapters. In the "*Myroure of Oure Ladye*" written much later,¹ many chapters are devoted to the details of its offices, its punishments for all sorts of crimes, and also to rules for its physicians. These rules were first printed in 1530, along with a translation of the life of Saint Bridget.

VIII. MIDWIVES OF THE 14TH CENTURY

IT is indisputable that the midwifery of the fourteenth century was left to women who had been more or less trained to care for women in labor. The men sat at their desks and wrote, or rather translated text-books from the Latin, for the use of these midwives. Among these text-books the works of Trotula were the standby, although by this time much of her teaching had become diluted with superstition and cluttered with stupid additions. They were frequently illustrated, sometimes with copies of old drawings, sometimes with scenes drawn from the imagination of the copyist. The copyists as a rule, for instance, conceived the gravid uterus as a sort of pink balloon containing an acrobatic baby in all sorts of positions. Unusual positions of the fetus, and

¹ Eckenstein, pp. 395-397.

all difficult labors, were frequently said to be due to dystocia of the pelvis, and sometimes to stone in the bladder.¹

No matter what training midwives had received, they were licensed without difficulty. Baas (op. cit., p. 271) says that in Würzburg, for example, there were at one time five midwives appointed by governmental authority and paid to treat the poor without compensation from the patient, each to remain in the house with her patient until her lying-in was entirely finished. In case a midwife was called to a patient in another town, she must first obtain the consent of the Bürgermeister before leaving her own district; and, if she required a consultation, she must not quarrel with, or scold, her consultant. The fees to be paid by well-to-do patients were regulated by law, but presents were none the less accepted from those who were wealthy.

In France, Witkowski tells us, the midwives of this century were exceptionally skilful. From those trained at the Hôtel Dieu certain women, called *ventrières*, were annually appointed to make medico-legal examinations. Two of these *ventrières* were sent in 1428 to attest the virginity of Joan of Arc, one of whom was said to be Iolande of Aragon, Queen of Sicily, mother-in-law of King Charles VII. If this latter is true, the office must have been a very honorable one. We find, however, that a midwife who "lost" a mother was liable to a heavy fine, if not worse punishment; while to lose a baby was an even more serious matter. Much depended upon the status of the midwife or patient, and whether or not the midwife could be accused of witchcraft. Many an innocent medical woman was probably killed on the charge of heresy, or because she was accused of being a witch.

¹ In an old English manuscript of the fourteenth century now in the British Museum, (Sloane, No. 2463), we find many of these illustrations showing the various positions of the fetus in utero, drawn in a highly dramatic manner like little men and women. They assume seventeen different positions according as they are upright, inverted, transverse, or having prolapsed arms or legs, or extended necks. 1, presents by the chin and arms; 2, is standing upright; 3, has its head down but its arms bent upward at the elbow, the description of which reads: "The third is if the child lyeth groveling or else upright, his feet and his hands upward above his head. The midwife in this case, must put her fingers in the womb and push up the arms so as to let the head come forward." This was possibly within the comprehension of the average English midwife, but it sounds enigmatical to us. 4, is transverse with its legs and arms in a dancing position; 5, has the right arm presenting from a transverse position; 6, still transverse, but with both arms presenting; 7, a sort of running position with one leg and one arm in advance; 11, shows shoulders presenting; 12, presents by the knees; 13, looks like a child having an accident in skating on the ice; 14, is totally flexed, head and left leg together at the *os uteri*; 15, twins, feet first; 16, twins again, head first; 17, buttocks presenting.

If we turn the pages of the "Great Surgery" of Guy de Chauliac, written about 1363, we find the exact status of the obstetrician in his time. Female anatomy was so little understood that his own mind was very foggy and his description of it for the midwives is obscure. He has, for example, an illustration of an autopsy of a woman. The scene is laid in a bedroom, where seven men and three women are witnessing the removal of the uterus. Evidently they find something not according to Galen, a non-bifid uterus perhaps, for the astonishment of the operator as well as of the spectators is evident.

De Chauliac also knew little about obstetrics, except that a woman was generally delivered on an obstetric stool, as in the days of Hippocrates. He says, "The infant presents itself commonly by the head, its face turned toward the earth. Every other position is against nature. A plurality of infants is also against nature, although Avicenna and Albucasis say that there are sometimes two or even nine babies at one birth. . . . The birth of an infant is generally controlled by women who soften the tissues by fomentations. The mother aids the birth by holding her breath or by sneezing violently because of the pepper or euphorbia or agrimony fastened to her hips. If the hips are raised, an unnatural birth may become natural. . . . If the infant is dead, the mother's breasts are soft, the child does not move, its eyes are closed, and it can not help itself in its birth. The midwife must then anoint her hands, having given the mother castor oil and rue, and try to pull the infant through the vagina. To do this she must open the uterus as widely as possible with her dilator, and apply a vice and hooks to the child's head and pull with both her hands until the child is born, whole or in pieces. If the bag of waters has not broken, let the midwife break it with her finger nails. If the mother is dead the infant should be removed by the same method as was used for the birth of Julius Caesar; viz. the mother's mouth and uterus being forced open, an incision should be made in the left side of her abdomen, the uterus exposed and cut with a razor while the assistant *accoucheuse* with her fingers in the uterus, pushes the baby from below," etc., etc.

The treatment of retained placenta is that of Albucasis. De Chauliac says that the patient should hold her breath while the steam from boiling camomile and rue is forced into the uterus, the uterus at the same time being manipulated from without. If the placenta is then still adherent, the midwife should plunge her fingers into sesame oil or mucilage of acacia, quickly place her hand inside the uterus, and so



"THE NATIVITY," BY GIOTTO, 14TH CENTURY.

*Mary lies beneath a blue coverlet. Joseph is wrapped in a yellow blanket.
The midwife is at the left.*

remove the placenta as gently as possible. If, however, it still adheres, she should pull harder and harder, and inject warm basilicon oil into the uterus. Then he adds, complacently: "Probably after a few days the placenta will suppurate and come away." Naturally, after such an operation, he and the midwives expected that the patient would have "milk fever" and a discharge of laudable pus, and would probably die.

For the removal of uterine moles the midwife was advised to use purgatives, pessaries, and "other instruments," after which she should apply hot fomentations to the abdomen, and paint the interior of the uterus with the following mixture applied on a feather: dragon's blood, mummy powder, cypress nuts, alum and wax, all mixed with the white of an egg. This was also De Chauliac's treatment for hemorrhoids and ulcers. He tells his readers that, after performing a laparotomy, the wound must be sewed as quickly as possible lest the cold air on the bowels should cause convulsions and death. The wound must then be tightly sewed for fear that the bowels "should fall out" later. He ends with the pious advice, "in a difficult case call on God for help."

From such instructions it appears that scientific thinking had already begun to decline, for after the days of Roger Bacon, the "things" which he had seen through his simple lenses were not seen again for centuries. Bacon had actually seen and studied a variety of cells, hairy epithelium, spermatozoa, ovules, and other microscopic tissues, but his confrères refused either to believe his statements or to test their truth personally.

Midwives, as we have seen, had many duties outside the lying-in room. They did considerable prenatal work. For example, if the legs of a pregnant woman were swollen, the midwife took a grinding stone, powdered it as finely as possible, mixed it with vinegar and anointed the congested legs with this antiphlogistic paste. Of course, to the doctors of the fourteenth century the cause of any swelling was merely a thickness of the blood, and that was an indication for abundant bleeding, a form of treatment to which nobody objected.

IX. MEN PHYSICIANS OF THE 14TH CENTURY

THE story of the medical women of the fourteenth century would not be complete without at least a glance at a few of the medical men of the age. Only six stand out.

Rosa Gallica aggrega

tionis Lugdunensis domini Symphoriani Chaperij omnibus
sanitatem affectantibus utilis & necessaria. quæ in se continet
pcepta, auctoritates, atque sententias memoratu dignas, ex Hip-
pocratis, Galeni, Erasistrati, Asclepiadis, Dioscoridis, Ra-
sis, Haliabatis, Isaac, Auicennæ, multorumque aliorum clarorum
virosum libris in unum collectas: quæ ad medicam artem re-
ctamque viuendi formam plurimum conducunt. Vna cum sua pre-
ciosa Margarita: De Medici atque egri officio.



TEACHING MEDICINE TO A WOMAN (14TH CENTURY)

*This illustration is taken from a Paris (1517) edition of John of Gaddesden's
"Rosa Gallica," originally published at Paris in 1492.*

Two of these six were Englishmen, John of Arderne (1307-1376), and John of Gaddesden (1280-1361). The former was a layman having no diploma, and, according to one author, "he was probably a better surgeon for not being a learned man."¹ Arderne had studied medicine at Montpellier and practiced in Antwerp, was surgeon to three English kings, was present at the battle of Crécy, and was a friend of the Black Prince. He was a Master in the Guild of Surgeons, and particularly famous in his own day for his operation for *fistula in ano*.² Although he was a skilled surgeon he was a great believer in charms and astrology; and although he insisted upon a surgeon's washing his hands and cleaning his finger nails before touching a wound, and was "gentle as a woman" in his surgical dressings, always using soothing ointments, like attar of roses and white of egg, he believed in laudable pus and in the excruciatingly painful cauterizing of bleeding vessels. He was tolerant of women doctors, but he speaks of them as "ladies bountiful" because they charged little or no fees for their services. For himself, he believed in large fees, pomposity, and the necessity of being able to tell a good story to interest the waiting and anxious relatives. For one operation for fistula, in 1370, he charged forty pounds sterling in cash, a new suit of clothes, and a pension of one hundred shillings a year.³

His best known works are a *Practica* and a *Liber de Fistulis*, both of which were used as text books for two hundred years. For several of his remedies he gives credit to "Madame Trote of Salerno," our old friend Trotula. Incidentally, it should be said that his method of treating fistula was to open up the tract on a grooved director and cauterize it to the source. The older treatment was a merely palliative one, by setons and salves.

John of Gaddesden was court physician to Edward I and Edward II, a prebendary of St. Paul's Cathedral, and the only professor of medicine at Oxford. Miss Bateson (op. cit., p. 363) says that in the middle of the fourteenth century, under the Franciscan revival, both classical and Arabic medicine were taught at Oxford. Very few men, however, studied Greek or Hebrew or Arabic sufficiently to read medical works in the original. Hence Gaddesden believed in most of the traditional nonsense of his time. He was one of the first to use red

¹ Dictionary of National Biography, article by Payne.

² He is no. 1831 in Osler's "*Bibliotheca*."

³ John of Arderne, "Treatise on Fistula in Ano," 1376, by Sir D'Arcy Power, 1910. John is pictured as a blonde-bearded man, lecturing in cap and gown from a sort of throne.

light in the treatment of smallpox. He believed in the efficacy of hanging a cuckoo's head on the neck of an epileptic patient, in the value of cockroach or cricket salve rubbed on the back of a "nephrytick" to cure kidney trouble, in the wearing of a colic belt of sealskin, in the "royal touch" for the benefit of skin diseases, and in the use of offal in medicines. He wrote a popular book called *Rosa Anglica*, completed in 1314—"a vapid rose, devoid of fragrance," said Guy de Chauliac—but it followed the style of the *Lilium Medicinæ* of his forerunner Bernard of Gordon, and suited the period.

Medical men in France were no more advanced, professionally, than those of England. Paris was a lively city in the fourteenth century, as Froissart tells us, and Montpellier was almost as gay as Paris with its tournaments, garden parties, and students' fêtes. Lanfranchi or Lanfranc (died 1315) and de Mondeville (died 1320) taught anatomy and surgery in Paris, as Guy de Chauliac, after their death, taught and wrote in Montpellier. Lanfranc was an Italian, and being a married man, he became surgeon of the short robe from the school of St. Cosmos, while de Mondeville was a celibate churchman of the long robe. Each wrote a *Chirurgia Magna*, but Lanfranc was too timid to perform many operations himself except with the cautery. Knives and saws frightened him.

The third French medical man, also a surgeon, was the most noted of the century, Guy de Chauliac, a bold operator and a great teacher. He was born in the diocese of Mende, Auvergne, in 1300 and died not far from there in 1368 or 1370. His surgical writings fill a great volume. They are in the main copied from the older surgery of Roger of Salerno, and Saliceto, though with considerable additions of original matter. Some people called Guy an impostor, and "an illiterate barber," but this only temporarily hurt his reputation. Although his Latin is not elegant, his descriptions of operations and of the Black Death are clear; and his "Great Surgery," the *Chirurgia Magna* (1363), was soon translated into various French dialects and into English. He was an expert trephiner and it is said that for some reason he trephined the old Pope Clement VI. But, besides trephining instruments, he had forceps and dilators, knives, saws, probes, arrow extractors, bone hammers, elevators, separators, and sounds. Many of these instruments could have been boiled or otherwise sterilized, and so may have given him his laudable healing without pus.¹ He gave his patients what anesthesia

¹ John of Arderne had the contrary opinion, believing in laudable pus.

was possible from the inhaling of fumes from a narcotic sponge, a relief which Trotula and the Salernitans had advocated long before his day.

Although De Chauliac classified surgeons according to their preference for moist or dry dressings, charms, holy oil, wool, herbs, and amulets, he classified women doctors, as we have already noted,¹ among the idiots and quacks. He, fortunately, did give them credit, however, for their midwifery, and considered them the natural physicians to women and children. Since he had only vague notions as to the manipulations required by a midwife and her general conduct of an obstetrical case, we should not be surprised to find him advising her to hang a dried toad to the neck of a patient who was having a hemorrhage. Many of his prescriptions were no more useful.²

De Chauliac was surgeon to three popes, and probably a friend of Petrarch, sympathizing with him in his grief at the death of Laura during the plague in Avignon. Though terrified, he forced himself to remain in the city as long as the plague raged, and then he wrote the best account of its ravages that has come down to us from the fourteenth century.

Just as Chaucer may have had John of Arderne, the Englishman, in mind when he wrote about his "doctor of physic," so perhaps Kipling may have had in mind the heroism of this Frenchman, De Chauliac, when he wrote:

Wonderful little, when all is said,
Wonderful little our fathers knew,
Half their remedies cured you dead—
Most of their teaching was quite untrue.

Yet when the sickness was sore in the land,
And neither planets nor herbs assuaged,
They took their lives in their lancet-hands
And, oh, what a wonderful war they waged!
Yes, when the crosses were chalked on the door—
(Yes, when the terrible dead-cart rolled),
Excellent courage our fathers bore—
Excellent hearts had our fathers of old.
None too learned, but nobly bold
Into the fight went our fathers of old.

—"Our Fathers of Old."

¹ De Chauliac, Guy, p. 16, "*mulierum et multorum idiotarum*." He said they did not read Aristotle, and they depended upon prayers. Evidently he was influenced by the Edict of 1352, and agreed that women should study medicine or be prohibited from practicing, for "*Il y avait donc des femmes exerçant la chirurgie, des chirurgiennes, avec un titre légal, et des médecastres qui, sans connaissances spéciales, s'immiscaient dans la pratique*." Du Boulay, "*Histoire de l'Univ.*" T. IV, p. 672.

² In his *Grande Chirurgie*, De Chauliac cites fourteen hundred authors, mentioning Rhazes more than 160 times; Roger of Salerno, 60; Lanfranc, 100; Saliceto, 70; De Mondeville, the great surgeon of Philippe le Bel in Paris, more than 100 times. "*Le Grande Chirurgie de Guy de Chauliac*," 1363. Introduction by E. Nicaise (1890).

(b) Robinson, Victor, "The Story of Medicine," 1931, p. 229 ff.

The greatest teacher at the medical school of Bologna at this time was Mundinus, or Mondino. Born in 1275, he studied and taught anatomy in the University, and drew students to his lectures from all over Europe. The Pope allowed Mondino the unusual privilege of the bodies of two criminals each year to be dissected before his class; but, as Nicaise says, he dared not see anything wrong in Galen's descriptions, and consequently did not allow what he saw "with his retinae to penetrate his brain."

The Pope, on the other hand, refused permission for new books to be brought into the library at Bologna without recommendation from a committee of churchmen. This was a great handicap to the University and drove many students to Paris. Mondino himself went to Naples, and died there in 1320. We may, in imagination, walk the old streets of Bologna with Mondino and his friend, Torrigiano of Mantua, as they discussed problems of medicine and surgery. They did wonder whether nerves both fetched and carried messages, whether the seat of the sensations was in the brain, as Dante had suggested, and whether the uterus had seven "cells," or was bifid; but Mondino declared petulantly that all wisdom did not die with Galen, thus agreeing with Dante. He reasoned that the length of the intestines was to prolong digestion, otherwise a man would be obliged to eat all the while and have no time for higher occupations. We wonder what Galen would have said. He almost dared to denounce the theories of Galen as to the similarity between the anatomy of the pig and that of human beings, but here courage failed him, and it was left for Vesalius, Mondino's pupil, to defy the Church in this matter.

In an edition of Mondino's "Anatomy," published by Beringarius of Capri in 1521, is a figure of a female sitting bolt upright in a chair exposing the interior of her abdomen to an audience. This little book on anatomy was first printed in 1478; it has only twenty-two leaves. It was often reprinted afterwards for the use of students. Among its bits of sage advice is one wherein the author approves a new method of fastening the cut edges of a wound together by means of a live ant. Its little claws hold the sides so firmly that after its head is removed the claws still act as sutures!

In looking through the medical annals of the fourteenth century one is struck with the paucity of Spanish names. Possibly this was because of the wars with the Moors, or the difficulties with heretics, or because many manuscripts have been destroyed. The only noted name

is that of Arnold of Villanova, a man actually of the thirteenth century, who lived into the fourteenth, dying in 1313, and leaving to the world his original writings and a metrical version of the *Regimen Sanitatis Salernitani*. Arnold was adjudged one of the heretics and his works were destroyed wherever found. He himself escaped by a hair's breadth only because he was of use to the king. He believed in witchcraft, was certainly a fanatic, and possibly an impostor.

Space should be given for a glance at the treatments which these men at the end of the Middle Ages gave for various diseases. For pleurisy or any severe pain in the side they placed a hot tile over the painful spot and sometimes gave a rich patient a bowl of the "slime" made from ground pearls and gold dust boiled with meadow rue. For a poorer patient they placed a paste of fennel and ivy on the tender spot and gave a glass of wine or hot chicken broth. For dropsy the patient drank his own urine, in which powdered toad had been mixed. For hemorrhages or boils a whole toad might be attached to the back of the neck of the patient, the jewel in its head being a specific for many pains. The ashes of a toad placed on the soles of the feet cured hysteria and headache. Charms written in Greek were considered a powerful remedy. Mummy powder was used for any disease, and the dried blood of a youth who had been recently killed was considered almost as efficacious as Egyptian mummy.

Weinhold, on the other hand (op. cit., vol. I, p. 159), tells us of a certain abbess who was famous for her treatment of fevers. She took slate stones, heated them and put them into the bed of a patient to make him sweat. She rubbed his feet with salt and vinegar, put rose water on his head, covered him with furs, and gave him hot almond milk sweetened with candied violets and pomegranates as a drink, which sounds much more sensible than the toad and urine mixtures. Cold baths were popular at this time. We read of a mayor in Speier, in 1344, who took a tub on his journeys. At times his joints became stiff from the cold water treatment, but he persevered. He probably also carried fossil belemnites in his pocket for a charm, as men nowadays carry a horse chestnut.

Surgeons like Guy de Chauliac and de Mondeville "cast their patients into a sleep," which sometimes lasted several days. This sleep was produced with copious doses of poppy juice and the inhalations from a soporific sponge containing nightshade, ivy root, blackberry juice, hemlock, etc. The dry prepared sponge was soaked in hot water and

placed at the patient's nose for half an hour before an operation. Occasionally the patient became maniacal from these inhalations.

Other items in the materia medica of the period were saliva, sweat, calculi, semen, and menstrual fluid. A wax image of a saint placed upon an altar might bring about a cure of anything. A piece of liver was used for the treatment of jaundice; blue stone, the color of the eyes, for ophthalmia. A cock's head was hung about the neck of an epileptic, while cow dung and spider's webs were applied to a wound to stop a hemorrhage. In "Piers Plowman," however, we find that a pig's bones would cure a patient as quickly as those of a saint, and a torn pillow case, remarks Chaucer, is as efficacious as the veil of the Virgin.

The "Perfect Leech," a manuscript of the fourteenth century, suggests a merely guess-work prognosis and treatment for a patient: "Give him to drynke cristal (ice), and if he spewe it he shall be dyde," but a mixture of all sorts of substances from the animal, vegetable, and mineral kingdom, mixed with milk of the mother of a boy, might prevent his death and cure his fever.

Chapter VII

The Medical Women of the Fifteenth Century

I. CULTURAL BACKGROUND

ALTHOUGH the fifteenth century was increasingly more brilliant in the arts than the fourteenth and the living conditions of the masses of the people were possibly more comfortable, little improvement or progress was made in the medical sciences or in hygiene. There was, however, a somewhat greater intellectual curiosity among the common people. They were more critical and more restive under the authority of the Church, although as tenacious as ever of its superstitions. Their delight in the new paintings and sculpture and architecture and poetry which were developing was childlike and enthusiastic, despite the fact that the century showed no single authors as great as Chaucer and Dante and no buildings as beautiful as those of the century preceding. Also too many of the "novelties" of the age were still revamped commonplaces of the old Greek and Roman times; although few scholars now could read Greek, and none but scholars could read Latin.

When Constantinople fell in 1453, its scholars fled to Europe, bringing with them their books and classical knowledge. The first waves of what we term the revival of learning had, however, struck the shores of Italy in the early years of the century. Like a slowly rising tide, its ripples spread to the West over the Continent, finally reaching England a hundred years later. To women these years, generally speaking, brought a freer life than had been known since the Golden Age of Greece. Upon Christians the influence was a mixed one. There was a new impetus toward pity and care for the sick and needy coupled with a growing belief in witches and witchcraft, and ever increasing propaganda against "heretics." Symonds¹ says that while actual criticism

¹ Symonds, John Addington, "The Renaissance in Italy," 1888, p. 156.

was at a low ebb, curiosity was "frantic"; and Walter Pater speaks of the "strange, uncritical learning of the Renaissance in Italy, when man in the image of God was thought to be the interpreter of the universe whose center was the earth and Jerusalem its nucleus."

Although it is true that the women of this century invented nothing remarkable, built nothing, and discovered nothing of note, it was in a large measure to win their admiration that sculptors adorned the vestibules of churches with the figures of women as saints; showed on the seals of the universities the portrait of a woman personified as Wisdom or Justice; and always identified goodness as the very essence of the feminine character. Leonardo da Vinci was a seeming exception to this rule. So was Ghiberti, whose marvelous bronze doors extol mainly men; and Donatello, whose men and boys are the embodiment of strength and purpose. Leonardo was an exception to many rules, being a much greater personality than any of the other artists of his day. He studied anatomy from nature, not because of any desire to prove or refute Galen, but solely for the sake of accuracy in his drawing. He refused to be a copyist, calling such artists "step-sons" of nature. He almost discovered the circulation of the blood; but unfortunately was more interested, for example, in the outward appearance of the heart than to find the way it worked. From his own findings he also radically changed the conventional drawings of the uterus and fetus which had gone unchallenged for centuries.

In every corner of nearly every country of Europe in the fifteenth century, and in almost every year, there were wars. This century marked the beginning of standing armies, and of battles in which guns and bullets were the chief weapons. The Hundred Years' War between England and France continued until 1453, when, after the burning of Joan of Arc¹ and the coronation of Henry VI at Paris in 1431, the English finally lost all their French territory except Calais. But when they withdrew from France it was to fight the Wars of the Roses for thirty years at home. In many countries rival contenders fought for thrones. For a period the Church had three popes claiming the papal throne, while from 1434 to 1443, there was no pope at all. Quite aside from the papacy all Italy was in turmoil; and between Genoa, Venice, Florence, Milan, Naples, and Rome, there was no peace for any length of time. After the wars between the French and English ended, fresh

¹ The story of Joan of Arc concerns us mainly because it is recorded that medical women were appointed to examine her, and testify as to her virginity.

wars began between the French under Charles VIII and the different countries of Italy; while, with the end of the Wars of the Roses in 1485 new wars began with Scotland.

After reading the long accounts of these seemingly interminable wars and intrigues, one wonders how any but the old and the young were left alive. And, meanwhile, as always, other ills were taking toll. Sanitation was still at its lowest ebb, pestilences endemic. The living conditions of the poor in every country were atrocious. When Henry VI went to Paris in 1430 it is recorded that he found the country "in a shocking condition," prisoners of "no value" being butchered, or thrust into dungeons to starve. Crimes of horrible atrocity were an everyday occurrence.

But, on the other hand, there were some heartening signs too. New efforts were being made to encourage the education of the masses. Women were increasingly trained for positions as teachers. In 1456 the first printing press was set up at Mainz in Germany; and this new process for the duplication of books spread like wildfire all over Europe during the latter half of the century.

Despite every possible handicap trade and travel were continually increasing. All roads were so poor as to be dangerous. People were drowned fording streams. Robbers took heavy toll from travellers, who were obliged to go heavily guarded. In 1450 the Mayor of London placed armed guards among the merchants at St. Bartholomew's Fair, for "noo man might well ride nor goo in noo cooste of this land without a strength of felauship but that he were robbed."¹ Margaret Paston in 1443² laments the many deaths from wayside accidents. People frequently migrated in search of food; the only communication between countries was by the few old Roman roads, or by the slow trading vessels which brought spices and silks to the great ports. At sea risks of every sort were even greater, and every ounce of cloves, cinnamon, ginger, and drugs involved danger. Human life was, however, cheap. Death by torture was punishment even for a simple theft. Murderers were broken on the wheel; women burned at the stake; and a mother who killed her starving baby had a rod stuck through her mouth and a stake through her heart, and she was buried before her flesh stopped quivering.

From the diaries and letters of women of the fifteenth century,

¹ Vickers, Kenneth H., "England in the Later Middle Ages," 1914, p. 439, taken from "Six Town Chronicles."

² "The Paston Letters, 1422-1509," ed. J. Gairdner, 1904.

especially from the Paston letters in England, and those of the Medicis in Italy, much may be learned about the life of the times in those countries. For disobeying her husband a wife was commonly beaten, but as Furnivall says,¹ they had learned to "take beatings more sweetly," because submission and deportment were taught to every well-bred girl, along with hawking and hunting. Margaret Paston may have been a shrew, but she was a capable one. When she decided to give her daughter as wife to an old man, she did not hesitate to beat her into submission. The Pastons belonged to a *nouveau riche* family, and, while her husband was away, Margaret was obliged to care for their recently acquired property. All the girls of the Paston and Medici families were well educated. They could write better than their men, could read and speak French and perhaps Latin.

There was no waiting for boys or girls to make their own choice as to marriage, for they were mere pawns and betrothed in their childhood.² Margaret of Anjou, wife of Henry VI of England and France, was betrothed at the age of three years and sent to England to be educated. She was sick with the smallpox when she started, but it was convenient to send her at that moment, anyway, and smallpox was something that everybody had to have.

European culture was nowhere higher at this time than among the Greeks of Constantinople who were sent into exile by its conquest by the Turks. They had lived in marble palaces hung with precious silks, and floored with Persian rugs of the finest weaves. They loved flowers, beautiful garments, and ate the most costly delicacies.³ Also they were great students and book makers and collectors. Although they lost all this in that fatal year, 1453, the scattering of them over Europe gave, as has been remarked, a new impetus to learning, and a new zest to art. We can imagine the surprise with which the peasants of Italy gazed at the physicians from Constantinople who arrived at their ports. Imposing in their bearing, clad in long red velvet robes over richly embroidered silks, carrying a staff as their insignia of office, and wearing velvet caps

¹ Furnivall, F. J., "The Babees Book," 1868, p. 13.

² Children were actually bought and sold at times; but, if put out to serve an apprenticeship at the age of seven years, they were expected to remain for seven years, and to receive neither wages nor good food—"cold meat baked on Sunday to last the week." Ascham tells us that Lady Jane Grey had a very severe training. Stephen Scrope, in the Paston letters, says that he was sold like a beast of burden, and he therefore wished to sell his own little daughter in the same way.

³ Neale, John Mason, "The Fall of Constantinople," 1913, p. 107.



A NEW BORN BABY IN A HUMBLE HOME—15TH CENTURY
(From *Margarita Philosophica Reisch*, 1496. Courtesy British Museum.)

over their long locks, their looks implied great learning. Unfortunately their actual knowledge did not match their appearances being limited to our old friends, Galen, Dioscorides, and Hippocrates, and certain astrological writers.

The peasants of a country suffered frequent changes of masters in those days, but changes in their mode of life came very slowly. Their hovels, whether in eastern Europe or western, were still scarcely better than cow sheds. A few tiles in the center of the floor served as a fireplace; a mass of rags in corner made a bed; a crucifix on a bracket was the only ornament. Their food was black bread rubbed with onion juice, and eaten with a bit of salt fish on Fridays. Their drink was native wine or cheap ale. Their chief amusements were to watch the rich at their games, and to gaze at the brilliant costumes of the nobility during tournaments, or miracle plays, or wedding festivities. They were fascinated by the piebald garments of men, the rich trappings of their horses, the extreme costumes of the women, with their grotesque conical bonnets, their veils with streaming ribbons, and their flowing skirts. But their amusement must have been tinged with some envy and no love, for murders of the rich by the poor were common. For the rich, in western Europe, living had now become much more comfortable. Their windows were filled with beautiful glass, their roofs were high-pitched, their rooms large, their bedrooms luxurious with tapestries and damask hangings.

With all this show of luxury there was, however, as much unrest among the rich as among the poor. Disease struck both alike. The Countess of Medici, in 1445, wrote to her son Giovanni, begging him to leave Rome before he should fall ill of the fever of the Roman Campagna. Poisonings were so common that any sudden death was generally attributed to the maliciousness of some enemy. The imposition of an extra tax by a king, a whispered tale of suspicion—these were all that were needed to produce distrust, a sabre thrust in the dark, or a draught of poisoned wine. The Countess urges the lad Giovanni to pray at once for pardon for his sins. She tells him that she is sending spices and capons and saffron and comfits to his young wife, Lucrezia, for her approaching confinement. In 1450 she writes to him again, begging him to return to Florence because the plague there had abated.¹

Some time later, in 1461, when Lucrezia was sent for treatment

¹ Ross, Janet, "Lives of the Early Medici as told in their Correspondence," 1911.

to the famous baths at Morba near Volterra, where natural mineral waters and volcanic steam vents had been covered with bath houses, she found bugs "as big as capons" running everywhere.

It is interesting to note what remedies for gout were sent to Lorenzo the Magnificent in 1489 by his physician, Avogarius of Ferrara. He was to take a purgation before the middle of March, a conserve at sunrise once a month, must wear a sapphire ring on the third finger of his left hand in such wise that the stone should touch his skin. In the summer he must have a stone found only in the stomach of a swallow sewn into his shirt, and wear it under his left breast. Thus, "Deo Duce," the pains of the gout will cease. Another physician to Lorenzo, Piero Leoni of Spoleto, writes Lorenzo in 1491 not to drink the water of Morba when the wind is northerly. If he takes a drink before breakfast he must ride fast and far immediately afterward. He is to beware of getting his feet cold or damp, to avoid sunset air, moonlight, eating peas, and to be careful not to swallow grape pips. When he died in 1492, at the age of forty-three, his death was believed to be caused by the mis-treatment of a Milan doctor, who had given him cold remedies rather than hot, and the wrong kind of jewels ground to powder for a tonic. At any rate this physician drowned himself from sorrow and remorse.

II. PESTILENCES OF THE 15TH CENTURY

THE medicine of the fifteenth century was no better than it had been.

It must have been a terrible thing to watch the progress of an epidemic, and know of nothing that would stop its ravages. Because commerce was increasing, diseases were also being spread with increasing speed. Private hygiene was unknown and there was still no public disposal of waste, or purification of drinking water. Pigs ran wild in the streets of London in 1471, and often bit the legs of pedestrians who disturbed them in their hunt for food. Fleet Street was so filthy that it had to be specially cleaned, or covered with fresh straw, if a procession was to pass through.

That was the year in which Sir John Paston wrote that the plague "was the most unyversall dethe that ever I wist in Ingelonde." Vickers (op. cit., p. 500) says that there was no English borough or town that was not infected. Two years later there was another outbreak of "unyversalle feveres, axes, and the bloody flyx" which lasted three years.

Then came an epidemic of the "styché," and another "flýx." There had been a serious famine in England in 1439, and an epidemic so virulent that the "kiss of homage to the king" was dispensed with for fear of infection. But, bad as conditions in England were, at the same time we find a boast in the Robin Hood Ballads, probably not unwarranted, that "the commune people...are the beste fedde, and also the best cladde of any natyon, crystyn or heathen."

The Plague of 1478 carried off one-third of all the inhabitants of Europe. Roland of Capellutus describes it as it was seen in Parma, Italy; because it was incurable there was, he says, "neither love nor pity," but only "inhumanity and cruelty to the sufferers." Then, as now, the plague was not so fatal if it attacked only the superficial glands as when it caused pneumonia. The only remedy attempted was to lance the buboes, as had been done by barbers, women, and quacks in all the earlier epidemics.

Then there came a "sweating sickness" which swept through July and August, 1485, with unabated fury. Dr. Caius, a Welsh physician of the time, says that its "victims died in a few hours, some in sleep, some in wake, some fasting and some full...in one house sometimes three or four or all the family were bathed in sweat from the beginning to the end." It began with a pain in the head and heart. Some tried to ward it off by voluntary sweatings. The king kept moving from place to place to avoid it. Erasmus' friend, Ammonius, died eight hours after his seizure. All the remedies tried—unicorn's horn, dragon's water, saffron, baked yolk of egg, and angelica root—were equally useless. The most efficient was "seven paternosters, seven ave Marias, one credo for every part of the body—*Quod pro certo probatum est cotidie.*"¹

Besides these greater epidemics there were continuous outbreaks of gangrene, erysipelas, whooping cough, and every other contagious disease that we know today. Syphilis was so prevalent, that, when the armies of Charles VIII were in Italy, a poem was written about it.² The remedies tried for these diseases were, however, no more efficacious than those used against the plague during any of the previous epidemics. They simply ran their course.

¹ Wheatley, Henry B., "The Story of London," 1909. Creighton, "History of Epidemics in Britain," vol. I, p. 202. Berdan, op. cit., p. 310. DuBellay, "Reign of Henry VIII," vol. II, p. 271.

² Fracastoro, Girolamo, "*Syphilis Sive Morbus Gallicus*," Venice, 1530.

III. EDUCATION IN THE 15TH CENTURY

PROBABLY the universities of Europe at this time were as fair an index of the civilization of each country as they were in previous centuries. Except in Italy, no women were allowed to matriculate at any university. The old established institutions were crowded with students, but their medical schools were small, and somewhat unpopular, although the rule of celibacy for doctors was not so strictly enforced as it had been hitherto. Medical students, however, required more money for their education than those who studied law. A man who studied medicine was obliged to live with his professor for four years, during which time they "disputed together, visited patients together, and combined with other medical groups to watch dissections."¹

It was not until 1460 that any medical students were allowed actually to matriculate at the University in Paris, although this had for some time been the custom in Italy and Germany.² After the invention of printing, as Daremberg points out, many of the old customs were changed, the students grouping themselves by nations, the teachers receiving adequate salaries, and many more students beginning medical courses.³ If, after four years, a student finally succeeded in passing his examinations in four subjects he might endeavor to obtain a license to practice. For this purpose he had to take a new examination, and then, if he had made a good record, don a red robe trimmed with fur, over an undergarment of violet silk, a square hat, sparkling jewels, violet gloves and gilt spurs. Thus clad, he was ready to ride to the great hall where he would receive the benediction of his faculty.

Even up to the middle of the fifteenth century, however, no university had broken away from its traditional premedical courses in the Seven Liberal Arts, although after the coming of the learned Greeks (a few of whom arrived as early as 1440) instruction was given at Bologna, Oxford, and Salamanca, in Greek, Hebrew, and Arabic, as well as Latin.⁴ Only two German universities could boast of more

¹ In London two medical *magistri* were appointed to oversee the barbers and surgeons, and the physicians prayed that "no man or woman should be allowed to practice but have a long tyme y used the Scoles of Fisyk withynne some Uiversitee and be graduated in the same." This shows that there may have been medical women graduates of some Italian university practicing in London.

² Rashdall, op. cit., vol. I, p. 502.

³ Denifle, P. H., "*Die Entstehung der Universitäten des Mittelalters bis 1400*," 1885.

⁴ Crump, C. G., and Jacobs, E. F., "The Legacy of the Middle Ages," 1926, p. 533.

than two medical professors, and not even at Bologna were there any new medical studies.¹

It was at Salamanca, in Spain, where Columbus studied, that innovations were first made. Here he learned the use of the mariner's compass. This university was under the patronage of Queen Isabella of Castile, whose friend Beatrix Galindo was professor of Latin and philosophy (including medicine). Owing to the influence of the East the university was soon noted for its teaching of astrology. Astronomical tables and geographical maps were prepared in its halls; and many of



BEATRIX GALINDO, 1473-1535

From the "Diccionario de la Lengua Espanola" (1473-1535), were educated in Italy.

its courses were under the patronage of the Spanish nobility. Rich students especially were drawn there because of its gay social life, its games and bull fights. During the two days of examinations the faculty rode about on gaily bedecked mules or horses, in brilliant cavalcades. Examinations were held in the chapel of Santa Barbara, and were followed by as many bull fights as there were candidates to pay the bills. Women like Beatrix Galindo²

¹ In 1413 the expression "Doctor of Medicine" was first used, by the Faculty of Medicine at Paris, the words "*physicus*", "*medicus*", and "*chirurgicus*" being no longer official and the old word "*meiges*" was dropped from legal forms. In 1490 the University of Montpellier gave courses in French for surgeons, but they were not popular with the clergy, and were dropped after a few years.

In 1452 celibacy was dropped from the laws of the University of Paris as not necessary for a student; and the lectures were given in new buildings in the *Rue de la Bûcherie* rather than in the ecclesiastical buildings. The courses in medicine consisted in natural sciences, physiology, hygiene and diet, and in pathology, *materia medica* and therapeutics. Three or four times a year there were public dissections of the bodies of criminals who had been hanged. (Nicaise, pp. 53, 54).

² Beatrix Galindo is said to have worn the costume of a nun or abbess. The hospital which she founded in Madrid is still in existence and her name is clearly legible on its ancient book of officials.

In London, and among the upper classes of France and Germany, the education of girls was not wholly neglected even though they were still felt to be inferior mortals. Boys and girls of the nobility were taught at home by tutors. The Earl of Northumberland employed eleven priests between 1477 and 1527 to teach his children. Wandering scholars were always welcome at the homes of the wealthy to teach vocational subjects and to describe the lands and people they had visited. They gave the family an opportunity to hear and speak foreign languages. Many of the daughters of the great land owners could write a letter in Latin in true Ciceronian style.

During the reign of Richard II in 1406 laws had been passed whereby "every woman or man of what state or condition that he be, shall be free to set their sons or daughters to take learning at any school that pleaseth them within the realm."¹ The Guilds maintained free schools, but only for boys, and there were church schools for boys at Winchester and Eton; several cathedrals and monasteries and abbeys offered schooling to their members. In 1447, schools being lacking in certain regions, King Henry VI permitted parish priests to open them where they seemed to be needed.

Although these free schools were able to provide instruction in reading, writing, and arithmetic, these were a poor basis for a medical education. Yet it was all that many a physician and surgeon could get. Even as late as the end of the fifteenth century, medical education seems, from our modern point of view, sadly lacking in everything practical, i. e. in directions for the diagnosis of disease and the care of the sick.

In the university at Paris the medical library consisted of only fifteen medical books. They included, of course, Hippocrates and Galen, a few Salernitan manuscripts, the works of Gilles de Corbeil, and one book by Rhazes. Ferrari da Grado says that, in 1438, there were also in Paris a translation of Serapion and one of Mesuë, besides the "*Rosa Anglica*," a commentary on Avicenna, a concordance, the "*Antidotary*" of Nicolaus, Herrada's "*Hortus Sanitatis*," the "*Circa Instans*" by Platearius, "something" of Constantine's, and probably a copy of Albertus Magnus' "Secrets." Whether or not there was in Paris a copy of Roger's "Surgery" or the "Surgery" of Guy de Chauliac, or the gynecology of Trotula, Ferrari does not say; but he adds proudly

¹ Wheatley, Henry B., "The Story of London," Chap. XXI, "Constitutional History of England," 1909.

that his own library contained eighty-nine manuscripts, of which sixty-four were medical, eleven being copies of Galen, Hippocrates, and Aristotle. In some of the universities the libraries may have been a little larger than that at Paris, but as a rule medical books were very few.

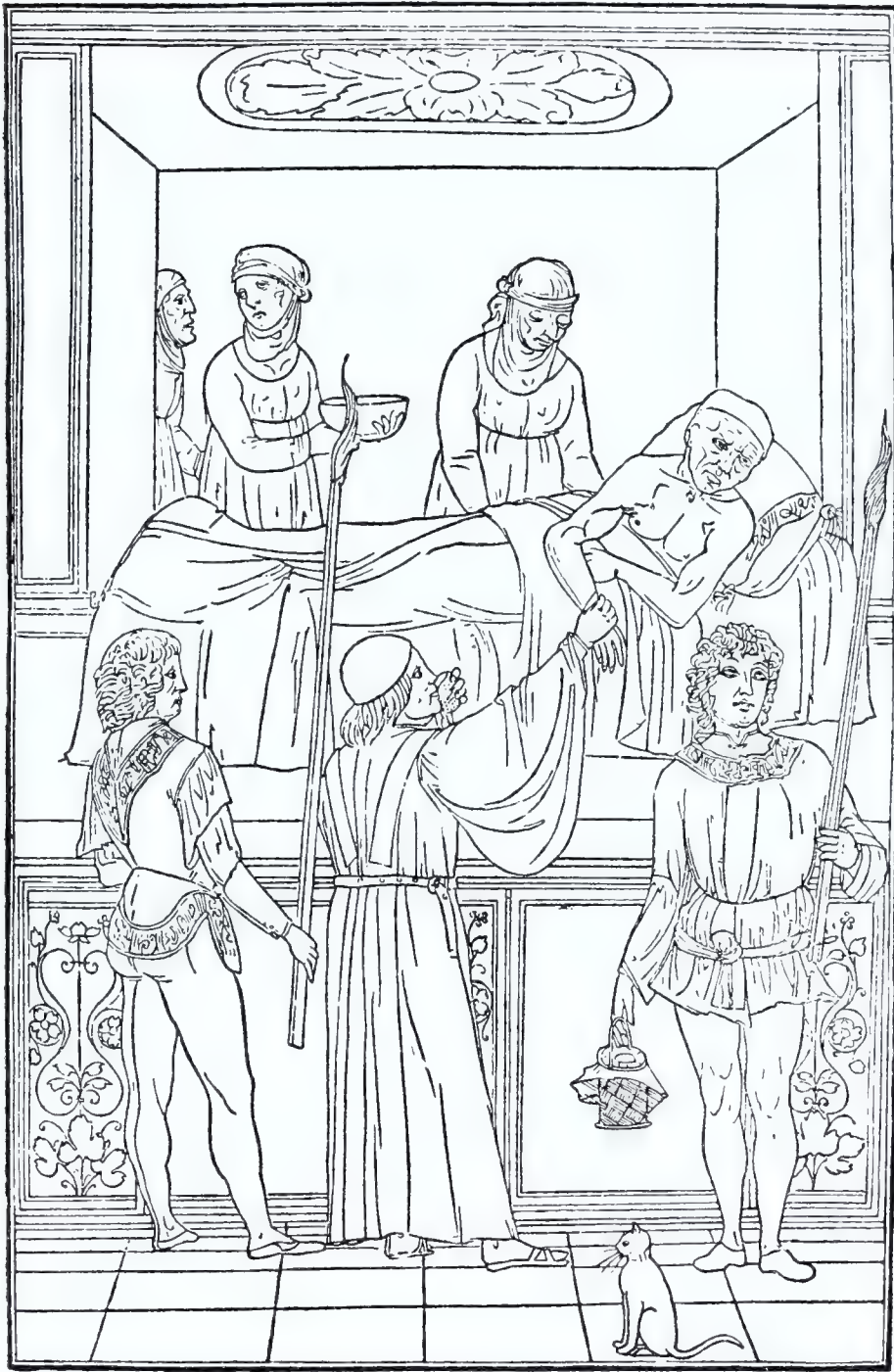
There were, however, larger libraries in some of the royal palaces, and in the castles and town mansions of rich merchants, than at the universities. The most famous capitalist of the century, Jacques Coeur, in his great house at Bourges in France collected treasures from all over the world, including manuscripts. Humphrey, Duke of Gloucester, had a magnificent library in England; and Lorenzo de' Medici had at Florence perhaps the largest library in the world, for he employed a great number of copyists, especially men who could translate from the Greek, and agents were buying manuscripts for him from monasteries everywhere. Anne of Brittany (1476-1514) owned almost a thousand manuscripts, mainly religious, many of which her two royal husbands had acquired by plunder in Italy. Most of them were beautifully illuminated Breviaries, Books of Hours, and Psalm books.¹

Anne was a very devout woman and believed in sacred relics rather than in medicines. But her first four babies were either born dead, or died in infancy, in spite of her sacred bones, a Guienne crown-piece wrapped in paper, a piece of black wax in a bag made of cloth of gold, the tongues of six serpents, rosaries of chalcedony and jasper, her offerings to the shrines of all the Breton saints, and even the fact that, bare-footed, she had presented rich gifts to the Virgin.

But neither medicines nor prayers, rosaries nor amulets were always efficacious in curing the kings of France. Charles VI had twenty-six doctors to keep him well, "besides surgeons and apothecaries," but he died insane in 1422. His son, Charles VII, died of cancer of the jaw; and *his* successor, Louis XI, who died in 1483,² was always so obsessed with the idea that he was going to be poisoned that his physician was obliged to taste all his food. Charles VIII, son of Louis XI, was a sickly lad. He was attended by twenty physicians, but died from an accident at the age of twenty-eight (1498).

¹ Sanborn, Helen J., "Anne of Brittany," 1917. See also "Memoires of Philippe de Comines (1447-1511)."

² When he went to war Louis XI took one surgeon for every 800 soldiers, besides his own corps of physicians and surgeons. The Emperor of Germany, Frederick III, had only one physician, a Jew, whom he knighted.



CONSULTING PHYSICIAN'S VISIT, 15TH CENTURY

(Note the woman doctor and the nurse, and the torch bearers and the servant carrying incense. From "Monumenta Medica," 1493.

By permission of Charles Singer.)

IV. MEDICAL WOMEN IN THE TALES OF THE 15TH CENTURY

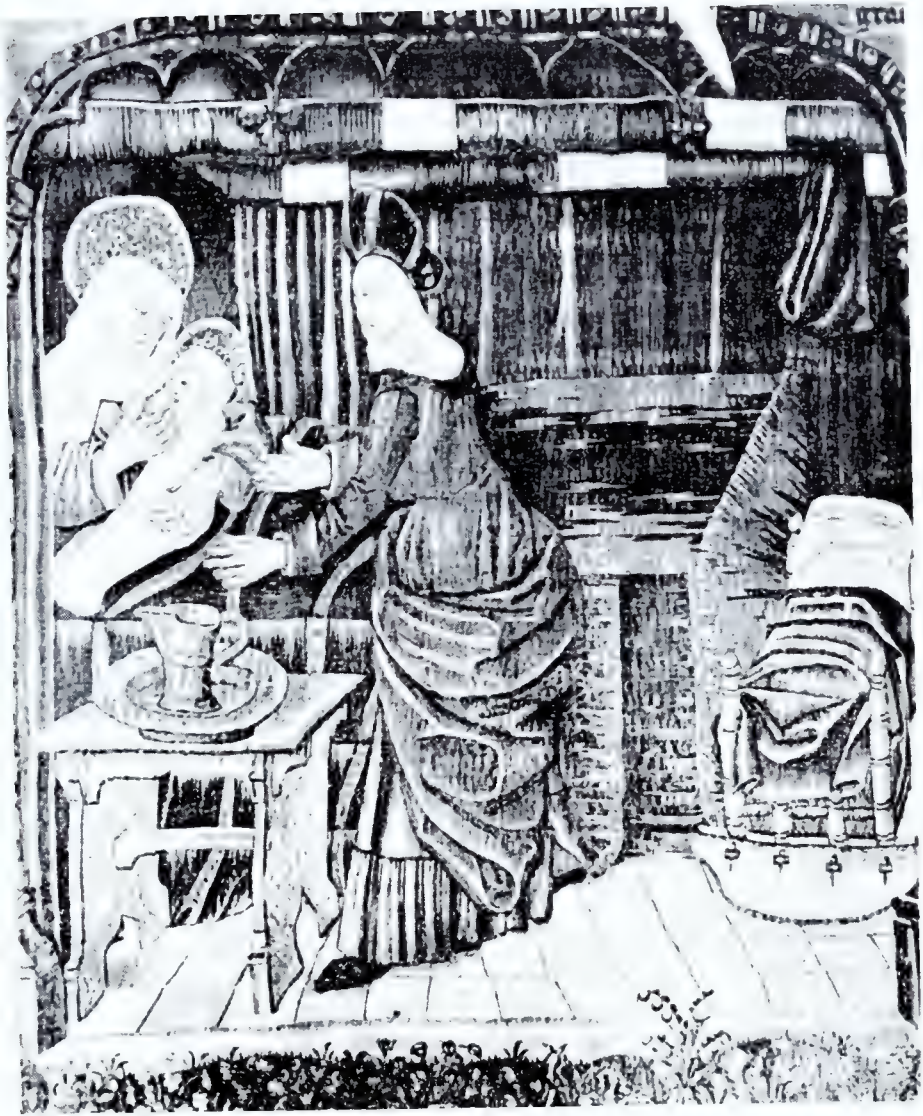
SIR Thomas Malory,¹ who died in, or about, 1470, condensed the old French stories of King Arthur and his Round Table, and presented them to the English readers of his own time. In these revamped tales² of the knights and ladies of the court of King Arthur we find no mention of men physicians. It is instead the fair ladies who remove murderous weapons from wounds, wash the bleeding surfaces, apply balms, and give all possible comfort to the sufferers. Sir Palamydes went to a nunnery to be cured; and "at the lytel pryory [of Sir Marhaus] laydes and damosels looked at his hurtes" and treated him with wisdom and gentleness. Mayden Lynet "serched the wounds" of Sir Bagdemagus, and "stynted his blood." Lynet also "stanchd the bleeding and laid an oynement and salve to the wounds" of Sir Gareth (Malory, *op. cit.*, vol. I, pp. 215, 233). The "beale Isoud" (vol. I, p. 250), was a "noble surgeon"; she found "poyson in the wound of Tristan and heled him," although he had searched in vain by "alle manere of leches and surgeons, both men and wymmen." All diseases were said to be mysterious, but were not individually diagnosed. They were called merely "sekenesse." In all the Arthurian legends women, as a rule, made ointments, kept bandages ready for emergencies, and probed wounds. Queen Morgan le Fay (vol. II, p. 33) searched Alexander's wounds and applied an ointment that caused at first great pain; but the next day she changed the dressing, and "thenne was he out of his payne." She gave him such a "drynke that in three days and three nyghtes he waked never, but slept." The "fayre Elayne gathered herbs for to make Sir Launcelot a healing bath." Sir Ywayn "staid with a ladye a half year that he might be hole of his grete hurtes."

In Germany we find women healing the knights and warriors in the tales of Tristan and Blanche fleur.

In the literature of Italy, so illustrious a writer as Ariosto (1474-1533) evidently takes it for granted that, if a warrior is injured, a woman can heal his wounds. Angelica, for example, in Canto XIX of

¹ Mead, William Edward, "Selections from Sir Thomas Malory's *Morte D'Arthur*," 1897. Bould, George M. and Pyle, Walter L., "King Arthur's Medicine". *Johns Hopkins Hospital Bull.*, vol. VIII, no. 81, 1897. Malory's "*Morte D'Arthur*" was the fiftieth book printed by Caxton (1485).

² "*Le Morte D'Arthur*" by Sir Thomas Malory. Ed. by Professor Rhys. *Everyman's Library*, 1906, 2 vols.



MOTHER, BABY AND WOMAN DOCTOR.

(From a 15th century tapestry "La Nativité de la Vierge.")

the "*Orlando Furioso*," heals the wounds of Medor after finding him almost dead on the ground. She gathers herbs for a tonic, treats him for several days, and brings him back to health (Stanzas 20-30):

Quando Angelica vide il giovinetto
Languir ferito, assai vicino a morte

.....
E rivocando alla memoria l'arte
Ch'in India imparò già di chirurgia,
(Che par che questo studio in quella parte
Nobile e degno e di gran laude sia;
E senza molto rivoltar di carte,
Che l' padre ai figli ereditario il dia),
Si dispose operar con succo d'erbe,
Ch'a più matura vita lo riserbe.

E recordossi che passando avea
Veduta un'erba in una spiaggia amena;
Fosso dittamo,¹ o fosse panacea,¹
O non so qual di tal effetto piena,
Che stagna il sangue, e de la piaga rea
Leva ogni spasmo e perigliosa pena.
La trovò non lontana, e quella colta,
Dove lasciato avea Medor, diè volta.²

V. NOTABLE MEDICAL WOMEN OF THE CENTURY

NO showy ceremonies marked the initiation of women into the practice of medicine in the fifteenth century, no disturbances of the peace, no money squandered for bull fights or banquets. What their medical studies consisted of in countries other than Italy we must piece together from the scattered accounts made by a few persons. Generally older women taught the younger, either from practical experience or from what they had learned from Trotula, Hippocrates, Galen, and Dioscorides. If women teachers wrote any books, or annotated the older texts from their own case records, they were unsigned and probably eventually were consigned to the dust heap. At least none has come to light.

Although some of the wealthy women of England and the Continent were able to study the Seven Liberal Arts with tutors, and to become good linguists, those who studied medicine were able to associate with men physicians only if they confined themselves to the practice

¹ From the time of Pliny the dictamnus plant had been of use in medicine to draw out arrows from a wound and scatter suppuration. The panacea plant belongs to the aralia family, and was thought to cure many diseases.

² Tasso, in the *Gerusalemme Liberata* (VI 67), confirms this statement of Ariosto when he speaks of the "*Arte, che per usanza in qual paëse ne le figlie de i re par che si serbe.*"

of obstetrics and charity work.¹ In 1421 the Church again issued an edict completely forbidding women to practice medicine or surgery under pain of imprisonment. But it had happened, fortunately, that in 1414 an edict had also been issued stating that "other than university physicians might be licensed by a Bishop on recommendation of the Faculty. This forgotten law provided a loop-hole; and in a test case in Paris, a medical woman, summoned to trial, was vindicated by the demands of her own patients, even as Agnodice of Greece had been vindicated seventeen hundred years before.

Pope Sixtus IV (1471-1484) issued an edict against the practice of medicine or surgery "by Jews or Gentiles, men or women, who were not graduates of a university"² (*"Nemo masculus, aut foemina, seu Christianus vel Judaeus nisi magister vel licentiatu in Medicina foret, auderet humano corpori medicare in Physica vel in Chyrurgia."*) At the same time (1484), Charles VIII of France refused to license women doctors to practice surgery even under the supervision of a physician or *magister*; but they were permitted to cup and bleed and cauterize freely, provided they did not accept fees for their work.

Such laws were, however, continually broken; just as a law passed in England in 1454 forbidding the study of medicine by other than celibates was frequently violated. Married doctors of this period are often cited in histories of the University of Oxford. On the Continent it is said they were obliged to pay heavy fees to the Church for immunity from arrest. In South Germany there is record of a doctor Manegeld, whose wife and two daughters were also teachers of medicine and practitioners connected with a convent. By 1491 both married men and barbers were attending medical lectures at the University of Paris. Then restrictions were attempted through the apothecaries, who were forbidden even to sell laxatives without a physician's prescription.

In the meantime women doctors continued to practice, with or without registration, in the midst of wars and epidemics as they always had, for the simple reason that they were needed, and could not be repressed.

There were few important medical women in England during the fifteenth century. There was one woman of royalty, however, who studied medicine in order to "help the poor and sick with intelligence."

¹ Rashdall, Hastings, "The Universities of Europe in the Middle Ages", vol. I, pp. 418 ff.

² Lipinska, op. cit., p. 149.

This was Margaret Beaufort (1443-1509), Countess of Richmond and mother of Henry VII. She was a great friend of Erasmus, and of other scholars; and besides founding colleges at Oxford and Cambridge, she also established hospitals and almshouses. At one of them, near her palace at Westminster, she personally attended to the needs of the patients, dressed the sores of the wounded, and prescribed for the sick. No remains of her hospital are left.

Conditions likely to favor the practice of medicine by women were no better in France than in England. France was not yet a consolidated country, but was composed of many little kingdoms and principalities, each ruler envious of the others and determined to extend his boundaries. This offers one excuse for the poverty-stricken condition of the universities and monasteries, and a reason for the low state of learning in France.

With all these adverse conditions it is not surprising that the name of but one French medical woman of noble birth, Frances of Brittany,¹ has come down to us. She retired to a Carmelite monastery, but emerged to tend the sick whenever the plague was raging. Another French woman, a barber-surgeon, Dame Léonard Pachau de Avignon, widow of Master Mangin Guérin, was given legal authority to inherit her husband's "boutique de barbier et de Chirurgien," with its equipment, and to carry on his business (Nicaise, *op. cit.*, p. lxii).

It is natural that, if there was one country in the Middle Ages where women might study medicine at the universities, that country should have more women doctors than any others. This was true of Italy.

We noted that the Medicis were great book collectors and had many agents out searching for them. In June, 1491, Poliziano, the librarian to the Medicis, wrote his employers that he had discovered copies of Galen, Aristotle, and Hippocrates, in Greek, and that he had also discovered a copyist who could prepare copies for the Medici library. And he adds, as an additional incidental bit, that he has just visited the well-known Cassandra Fidelis, finding her a woman as handsome as superior in learning. He says he "came away astounded at her intellect and scholarship." This Cassandra Fidelis

¹ Kavanagh (*op. cit.*, p. 349) is authority for the statement that it was this Duchess of Brittany, the mother of Anne, the queen of Charles VIII and Louis XII, who attended her bitterest enemy through a long illness, and then retired to a monastery and cared for the nuns there through an epidemic from which she herself died.

lived most of her life in Venice and Padua, where she was particularly renowned for her knowledge of medicine. She wrote a book in 1484 on the natural sciences and the treatment of disease under the title "*De Scientiarum Ordine*" (Harless, op. cit., p. 138).

Pierre Lemoyne¹ mentions two women in northern Italy, a Lombard princess named Amalosunta, and another named Pulcheria, both of whom, he says, "performed medical miracles in those days by peaceful methods," whatever that may mean.

Earlier in the century, there lived in Naples a famous daughter of a famous Salernitan physician, Laurea Constantia Calenda, the wife of Baldassare de Sancto Magno. She taught medicine in 1423. Tiraquellus, Mazza and Toppius,² all historians of note, agree that she was a medical woman of great erudition. Her daughter Laura somewhat later was a teacher at the university of Naples. Renatus Moreau³ mentions another teacher at Salerno, named Abella, who was writing medical treatises in verse, and also lecturing on bile and the nature of women; and still another named Sentia Guarna, a member of a Sicilian family of great lineage. He says of Abella that she was "*Donna di molto intendimento*." Moreau says⁴ there was also a Françoise, noted as a surgeon, who also lectured and wrote on gynecology, and was fully licensed to practice medicine. Also a Marguerite of Naples, a graduate of Salerno, who was physician to the family of King Ladislaus in 1414, and wrote poetry in her spare time.

Dorothea Bocchi was still teaching medicine and philosophy in Bologna, and continued there until 1436, and a Marguerite Saluzzio was practicing in Piedmont in 1460, and so popular that wherever she went crowds followed her begging for medicine.

According to the records, in 1458, Pius II, then Pope, sent to Bohemia for Brela, the daughter of its king, asking her to come to Rome to treat him. The Bohemians of those days were noted for their cures by medicinal springs and mud baths, but we are left in doubt as to the

¹ Lemoyne, Pierre, "Gallerie of Heroick Women", translated by the Marquess of Winchester, 1652.

² Mazza, Antonio, "*Historium Epitome de Rebus Salernitatis*," 1681, p. 129. Toppius, Nicholas, "*Biblioteca Napoletana*," 1678.

Moreau, Renatus, "*Schola Salernitano, de Valetudine*," 1625.

³ "*Floruere igitur in Patrio Studio docendo, ac in Cathedris disceptando, Abella, Mercuriadis, Rebecca . . . ac Sentia Guarna, ut ait Fortunatis Fidelis.*" Mazza adds, "*Eruditos enim multas habemus mulieres, quae non nullis viris ad multa praestantiores, ipsoq; doctrina, vel vicerunt, vel aequarunt: nam ad medicam facultatem mulieres, sicut ad viros aptas esse scripsit Plato ac Martialis cecinet.*" Rebecca Guarna was perhaps of an earlier date than Sentia.

special infirmity of the Pope at this time. He was that Aeneas Sylvius Piccolomeni, whose history of his own times makes us wish that others during the Middle Ages had written autobiographical reminiscences. As to the Brela mentioned, authorities differ. One says that she was a medical woman of an earlier time than this, the daughter of a Bohemian king named Crocus; but Pope Pius II distinctly says that she was the daughter of his enemy, Podiebrad, the then reigning king.



QUEEN ISABELLA OF SPAIN

was a family of Brancas who were famous doctors. In Calabria there was the Bojani family. In Milan the Norsinis were famous for their operations for stone in the bladder and for their facial surgery (including

Baas¹ tells us that in this century it was quite the fashion for whole families to practice medicine together, as we have already seen was the case with the Manegelds in southern Germany. Perhaps this is one reason why we seldom find the names of women doctors independently recorded. In Italy sanitariums and clinics were managed in this family way for many years. In Catanea there

¹ Baas, John Hermann, "*Grundriss der Geschichte der Medicin*," 1876, p. 242.

the making of new noses for syphilitic patients!). The Savonarola family in Ferrara were especially noted for their cures "from head to foot." Michele Savonarola (died in 1462),¹ the grandfather of the martyr, wrote a book on general medicine while he was professor at Ferrara. His treatment followed in general the teaching of the Arabs; but he was lost—or his patients were—without a talisman and precious stone to go with his treatments. He was one of those who advocated gold as a medicine, and also the drinking of the blood of children as a tonic. (This latter remedy was said to have been used with good effect in the case of King Louis XI of France.) There was also a family of Colets (or Coletti, to use their Italian form of name) who migrated to Germany, and were famous there for their operations for stone and for their costly cures.

Besides these various medical families and the university women of Italy, there were two important Italian medical women in the fifteenth century who became saints. They were Catherine of Genoa (1447-1510), and Catherine of Bologna (1413-1463). The latter was abbess of the monastery of the Poor Clares. She ruled wisely, and instituted visiting nursing of a high order. Her "sisters" were taught medicine in order to prescribe for, as well as nurse, their patients; they diagnosed diseases, understood the significance of urine and the pulse, knew the signs of death, and prayed with those for whom there was no earthly help.

Saint Catherine of Genoa belonged to the noble family of the Fieschi. She was the youngest of five children, and, when very young, was betrothed to a dissolute fellow, whom she was compelled to marry against her will. He continued to be dissipated and faithless until, suddenly, they were both convinced of their sins by a traveling preacher. In repentance they decided to separate, and devote their lives to the cure of the sick, particularly lepers. They had been well educated in the Seven Liberal Arts and in medicine.

Catherine became noted for her devotion to the sick, treating those with the plague when it was endemic (1497-1501). In spite of her reckless exposure to contagion she lived until 1510. The kindly and intelligent face of this Saint Catherine of Genoa looks out at us from a portrait published by Baron von Hugel.² She was a great mystic; and, like

¹ Savonarola, Giovanni Michele, "*Practica Medicinæ*," (Venice), 1486.

² Von Hugel, Baron Friedrich, "The Mystical Element of Religion as studied in St. Catherine of Genoa and her Friends," 2 vol., 1908, 1922.



THE HOSPITAL OF ISABELLA THE CATHOLIC AT SANTIAGO DE
COMPOSTELA, IN SPAIN. 15TH CENTURY.

some other saints, wore a hair-cloth shirt next her body, lay at night in thorns, and practiced self-denials of every kind. It is recorded that, when she lay upon her death bed, the ten doctors whom she called in consultation "could find nothing the matter with her." She was convinced, however, that her time had come, and shortly thereafter she died.

In Spain there was a lack of records of medical women, as in most other western countries. This was not the fault of Queen Isabella (1451-1504), the broad-minded friend of Columbus, or of Beatrix Galindo, then a professor at the university of Salamanca. Isabella was a well educated woman, and a student of medicine, who understood the need of trained physicians both at home and on the battlefields.¹ We are told by Peter Martyr (1455-1526), her ambassador to Milan,² that, during the war to expel the Moors from Spain, she superintended the construction of four large tent hospitals at Santa Fé, provided them with all possible comforts, and appointed their physicians, chemists, surgeons, and assistants—some of them women. When the war was over she undertook the construction of many permanent hospitals all over her united country.

Perhaps the only one of these still in existence is that at the famous pilgrimage town of Santiago di Compostella, at the foot of the Pyrenees, where never diminishing throngs of pilgrims from every land make a permanent hospital as necessary as tent hospitals are on a battlefield. Compostella was then a large and busy city. Isabella's hospital, close by the cathedral, was a large Gothic building, light and airy, cool in summer and warm in winter, built around four courts in which, as in those of the Arabs in Cordova and Seville, fountains played, fruit trees provided shade, and cloistered arcades gave convalescents an opportunity for short walks.

In Portugal there was in the fifteenth century another royal medical woman, Queen Elizabeth, a woman of great erudition and benevolence. She had studied medicine as a religious duty, and diligently practiced it among the poor. Following the traditions of her ancestors she built up the universities of Coimbra and Lisbon, and constructed hospitals.

Still another royal medical woman was Margaret of the Nether-

¹ Julia Kavanagh tells us that Isabella of Castile "practiced the difficult charity of attending the sick with whatever infections and repulsive diseases they might be infected." See Kavanagh, "Women of Christianity," 1852, p. 102.

² Plunkett, Ierne L., "Isabella of Castile, 1451-1504," 1915.

lands.¹ She was the daughter of the Emperor Maximilian, became the widow of three kings, was aunt of the emperor Charles V of Spain and Austria, and herself a long time ruler of the Netherlands. She was a woman whose judgment and decisions were both quick and wise, because of her careful education in science, medicine, and the arts.

Although Christian women were practicing medicine in the fifteenth century, albeit under legal restraint, the Jews were now being hounded, tortured, and expatriated from nearly every country of Europe. Notwithstanding that they were generally considered the best doctors, they were continually under the ban of both Church and State. The king of Spain in 1412 signed a decree driving them from Spain; in 1443 the Church passed laws forbidding all Christians to employ them, although the heads of the Church were even then being privately treated by Jews; in France and England Jews continued to be hired by the year as family doctors by private citizens.² Francis I of France and the Emperor, Frederick III, a few years later, employed and knighted Jewish physicians.

The Archives of Frankfurt-am-Main list fifteen Jewish medical women who paid large taxes and practiced various specialties.³ In 1428 an eye specialist named Zerline was in trouble with the town councilors,⁴ perhaps for evasion of taxes, and was ordered peremptorily to pay what she owed and to stay within the ghetto at night, or to leave Frankfurt at once. In 1494, however, a Jewess was rewarded for some good deed by the remission of her taxes.

In Würzburg⁵ the records show that a woman named Sara was forced to pay ten florins a year for permission to practice medicine; but this was reduced to two after she had bought a new house in town. In 1497, in Passau, an edict forbade Jews, and all "old women," to practice either medicine or surgery; but there had been no objection on the part of the authorities when Jacopa of Passau, "*la medica madonna*," during the plague of 1474, succored its plague victims with tender care.⁶

¹ Tremayne, Eleanor E., "The First Governess of the Netherlands, Margaret of Austria," 1908.

² Schreiber, Rabbi E., "The Jews in Medicine." *Medical Standard*, 1912.

³ "Archives of Frankfurt a M.," 1389-1497.

⁴ Lipinska, op. cit., pp. 123, 149.

⁵ Baas-Handerson, "Jewish Life in the Middle Ages," 1896, pp. 339, 342.

⁶ "*La medica madonna Jacopa che medicava d'impiastrì nel tempo della mortalità del 74.*" Lipinska, op. cit., p. 149.

VI. THE MIDWIVES AND THEIR TEXT BOOKS

DURING the fifteenth century belief in witchcraft became for the first time really wide spread. Theologians and lawyers—and in turn the populace—believed, or pretended to believe, that a vast number of women were in league with the devil, to the injury of their neighbors. Many of these women were tortured until they confessed their guilt, when they were publicly killed. This witch mania lasted well into the eighteenth century, and all through this time there were thousands of people who thought that there were women who could change themselves into bats and sprites and cats, fly through the air on broomsticks, enter rooms through keyholes, kill a newly born baby by a word or a glance, and by some remote hocus-pocus cause the death of its mother.

It is not surprising to find that with the bans against women physicians, and the witchcraft mania, women became afraid to undertake even midwifery, although men were not particularly interested in it. Custom and convention continued to insist, however, on having women in the position of midwife, not only to the common people but to royalty. There was some danger, but there was recompense. Aveling, in his history of English midwives, tells us that they received good fees. Margaret Cobbe, midwife to the queen of Edward IV, in 1470, received ten pounds a year in gold for life, together with many presents in recognition of her services.

Witkowski gives us many pictures of the lying-in rooms of this century.¹ In one, typical of many, we find a wealthy mother who has recently had a baby sitting bolt upright against a pillow drinking her gruel, while the woman doctor stands proudly beside the gaily covered bed holding the child. Other scenes include a nurse or two, who fetch water for the baby's bath, hold a towel, or prepare the child for its salt rub. As a rule the bedroom in these pictures is gorgeously decorated, the bed curtained with damask, the woman doctor, or obstetrician, dressed in silk or velvet, the floor covered with rare rugs, and a fire blazes merrily. All this must have been a great contrast to the lying-in room of the peasants. In either case, however, if the baby or its mother died, the midwife or doctor was liable to be blamed for it, perhaps also tortured under imputation of witchcraft.

Education of the midwives of this period was generally by oral

¹ Witkowski, Gustave J. A., "*Histoire des Accouchements chez tous les peuples*," 1887. It has 1585 illustrations.

Dis; biechlin sagt wie sich die schwangern frauen halten sülle vor der gepurt in der gepurt vnd nach der gepurd.



Ich Ortolfus doctor in der ertzney von fleysfiger gebete willen bin ich gebeten worden von erberen frauen/das ich jnen ge;chriben wär geben ein kurze lere/als wenn die schwangern frauen sind nachnen der gepurd/wye sy sich darinn halten sollen vnd auch die h;famme zu der frauen vindest du hienach in disem büchlin geschriben.

ORTOLFF VON BAYERLANDT (15TH CENTURY)

He is here instructing a woman that, before examining a pregnant woman, she should wrap her hands in cloths soaked in olive oil.

tradition, taken directly or indirectly from Trotula. Toward the latter part of the century, however, at the earnest request of certain midwives, on obstetrics were compiled in the language of each country. These books on obstetrics were compiled in the language of each country. These books were called by the Germans, "*Frauenbüchleins*."

That of Ortloff (or Ortolff) von Bayerland (i. e. of Bavaria), a native of Würzburg, printed before 1500,¹ is typical of all of them. His own portrait graces the opening page. We see an elderly bearded man expounding the text to a seraphic looking woman. He tells her that before examining the patient she must wrap her hands in a cotton cloth soaked in olive oil. This is a new point. He emphasizes the need of care of the mother during the months before the birth of her baby, and especially of attention to her diet, which, he says, should consist largely of beans, because they "make a large and strong child."

As concerns the position of the fetus, he insists that a foot presentation is "not to be turned"; but that all others must be turned so that the child may present by the head. He believes that a knee-elbow position of the mother brings a quicker birth with less pain than a birth on the obstetric chair. He adds that the child's navel should be covered with a walnut shell, and bandaged with a cloth soaked in olive oil. According to him the treatment of puerperal fever should be expectant, chiefly by the drinking of strong old wine. He gives further advice as to the possible sequelae of labor, incontinence of urine, swelling of the legs, prolapse of the uterus, fistulae, tumors, cancer, etc. He says a mother should not be bled, should not jump, and should do only light work. A wet nurse should be carefully chosen for the baby, which must be kept tightly swathed excepting for a few minutes each day. Its body should be washed at least once a week with warm water containing rose extract and vinegar. The mother is not to remain in bed more than a week, and, if she flows too long, she is to drink dictamnus tea and warm wine, and the midwife is to examine the inside of the uterus for bits of retained placenta. He adds that, as sterility is always to be feared, a mother who wishes to have other children should eat pork and kid meat during her lying-in, drink water of violets, and, later, take medicated baths.

Another book of this century, written by a man for women doctors, or midwives, was the "*De mulierum aegritudinibus*" of Antonius Guay-

¹ "*Das Frauen Büchlein des Ortolff von Bayerland*" (on or before 1500). Begleit-Text von Gustav-Klein, reprinted 1910.

nerius or Guaineri (died 1440), who was a professor at Pavia in the first half of the century. He also wrote "*De passionibus stomachi*" and "*De fluxibus*." The book on gynecology was printed in 1488. It contains all the current superstitions in obstetrical practice; and ends, as do his other books, with "*Laus Deo, Amen*." He quotes freely from Trotula without mentioning her name; but his stercoraceous remedies are his own. Where she applied sweet odors to the nose to aid in replacing a prolapsed uterus, and spicy vapors to the vulva, he uses the smoke of burning cow dung. For the treatment of sterility in the female he uses stones from an eagle's nest, a necklace of peony seeds, and fumigations from the burning teeth of a dead bull. For sterility in the male he advocates mixing the testicle of an ox and the cerebellum of a sparrow with certain herbs, and dividing the mass into pills to be taken at bedtime. He adds, "Believe me, this is a sure cure." He even goes so far as to say that, since John the Baptist was born of elderly parents, there is always hope for anybody desirous of begetting progeny.

For the treatment of difficult labor Guaynerius advises merely the constant replacing of a prolapsed arm or leg, hoping that the child will eventually find a possible way of being born. If the mother dies the child may be removed by Caesarian section, since "some of the world's greatest men have been born in this way." If the mother seems fated to die from prolonged labor or hemorrhage or fever, he comforts her by saying that "the crucified Christ alone can heal her"; adding, however, that a very skilful midwife may save the life of her child by bi-manual version.

Version was, however, seldom tried; the midwives of the day knew no remedy for placenta previa, and were helpless in hemorrhage. Few of them would attempt to mutilate an unborn child, in order to remove it in pieces and so possibly save the life of the mother.

The story of the death of Beatrice D'Este (1475-1497) shows us the low state of obstetrics at the end of the fifteenth century. At that time the duchy of Milan was tottering under the extravagant rule of Beatrice's husband, Ludovico il Moro. The invading army of Charles VIII was spreading syphilis in its train all over Italy, and it was a common occurrence for a mother to die in labor. The scene is the great castle of the Sforzas in Milan, on New Year's Day, 1497. Two thousand guests are feasting and dancing in the great hall. Suddenly, Beatrice, only twenty-two, is taken with unusually atrocious labor pains, although she had already borne two children quite normally. She flees to the tower room, where the midwives are already waiting for her.

To relieve her agonizing pain one of them advises her to swallow the raw white of egg with a few bits of scarlet silk in it; another proposes wrapping her right leg in a snake's skin; another would have her sit over a pot of boiling water; another advises tying the Duke's cap to her abdomen; another brings her hot spirits cooked with stubs of deer's antlers and cochineal; still another mumbles something about "the eagle stone under her right arm-pit and a lode stone under the left." One old dame urges her husband to eat a piece of wolf's meat while she mutters,

One she-wolf and male wolves seven,
Let a whirling wind arise
And our evil carry off.

By then the court *Medicus*, Marliani, has been summoned, but he "regretted that he could do nothing." Another *medicus* comes forward, and suggests giving the already dying woman "three ounces of river snails with muskat nuts and red brayed coral." Another is for phlebotomy; but another wearily shakes his head and says that Mars is in the constellation of Cancer and that therefore phlebotomy is contraindicated. A last suggestion is to add cow's dung to the snail mixture. Finally came the chaplain and monks of the castle bringing parts of the body of Saint Ambrogio, the ceinture of Saint Margherita, a tooth of Saint Cristoforo, and a hair of the Virgin Mary. Ludovico calls them all fools, and flees to the chapel, where he vows to give the Virgin a candle the size of a mast of a ship if only his wife be saved. But nothing avails. Beatrice dies.¹ Can anything throw a more vivid light on the obstetrics of the time even among the wealthiest people of Europe?

Many other rich and charming young women of Italy died giving birth to their babies. One of them, the popular Giovanna degli Albizzi, was a relative of the Medicis in Florence, and the wife of Lorenzo Tornabuoni. Her portrait is seen in several paintings and sculptures by Botticelli and Ghirlandaio and Ghiberti. Poliziano praised her for gentleness, beauty, and great intellectuality, and deplored her death. "*Giovanna degli Albizzi. .morta nel dare alla luce il secondo figliuolo.*"

VII. PEDIATRICS—A NEW SPECIALTY

AFTER printing presses were set up it became easier for people of moderate means to buy books. It is interesting to see how soon

¹ Cartwright, Julia, "Beatrice D'Este, Duchess of Milan," 1899. Also Merejowski, Dmitri, "The Romance of Leonardo da Vinci," 1931, pp. 234 ff.

medical books were published, especially those on the diseases of women and children. The first, Paulus Bagellardus' "*De Aegritudinibus Infantum*," was printed in 1472 in Padua in Latin. Bartholomäus Metlinger's "*Kinderbuch*,"¹ printed in German in Augsburg in 1474, was a better seller.

Bagellardus took much of his material directly from Rhazes, and it was printed almost as soon as written. Metlinger quoted from many of his predecessors, including Galen, Avicenna, Avenzoar, Constantine, and other ancient authors who had written only incidentally about babies and little children. Evidently, neither of these writers had ever seen a manuscript copy of Trotula's book (it was not printed until after the end of the century); but they used the same sources that she had followed, adding many practical suggestions from their own observation.

Metlinger, being no slavish copyist, wrote his little book in as simple language as possible, as it was intended for mothers and nurses rather than physicians. Parts I and II give directions for the diet and hygiene of a well and normal baby. Part III concerns sick children. Part IV considers their physical and mental education up to the age of seven years. The whole book, or rather pamphlet, fills only forty-five pages. Some of the advice is now as obsolete as the language of the original text. The nurse, for instance, is to be bled from her right or left arm or foot if the baby whom she is feeding has colic, or if its teeth are slow in erupting, or if it has a fever. Sometimes as many as twenty-four remedies are to be given to a baby who has an umbilical hernia or hydrocephalus. Both Metlinger and Bagellardus agree that Galen was right in prohibiting wine for any child before puberty. "*Wein und Bier sind Kindern schädlich, denn sie füllen ihnen das Haupt mit böser Hitze und betrüben ihr Gemuth*" (op. cit., p. 45). Metlinger advises the father to administer corporal punishment to his child often in order that the child may avoid great crimes when he is grown.² He describes twenty-five diseases of childhood, prescribes pastes and plasters and lotions for the rashes which, he says, were first described by Rhazes, "hence the name rash." For the fever of these diseases he recommends soothing drinks of barley water and fruit juices, linseed and fig teas, etc. To

¹ Bartholomäus Metlinger's book was soon translated into Latin, and so published in Frankfort.

² Metlinger quotes the maxim of Aristotle on the bringing-up of children: "The soul of a child is a clean tablet on which nothing has been written, but on which one may write what he wills. Therefore, children must be trained to be honorable, but not punished too severely for misdeeds."

prevent the pitting of smallpox he advises powdering the pustules with a mixture of magnesia and ground bone, or the use of a salve of these ingredients mixed with ground peas, rice, and melon seeds.

The irritated gums of the teething baby¹ are to be rubbed with hen's grease, dog's milk, and disgusting animal preparations long since discarded. For the treatment of sore eyes and a running nose, large glands in the neck, and deafness, Metlinger merely twiddles his thumbs and says, "The Lord's will be done," although the nurse might take the milk of the mother of a girl, or camphor water mixed with the juice of beans and peonies, and drop some of it into the child's nose as a panacea. For constipation senna tea is the remedy of choice. For stone in the bladder, so common in those days, Metlinger says the following prescription is of value: "Take six green walnuts, grind them and mix them with onion juice and strawberry juice; administer the mixture freely,"—if it does no good, then "a *meister* must be called who understands cutting for stone." For intestinal worms he prescribes the eggs or the bodies of earthworms mashed with milk of bitter almonds. An amusing bit of advice as to a way to increase the milk of a wet nurse is to feed her the "udders or mammary bags of goats or sheep." The last chapter of Metlinger's book gives sage advice as to the child's education up to its seventh year. He quotes Galen's caution that a toddling baby may have a "hump-back" if through the carelessness of its nurse it has a fall. He advises bathing a weak child in cabbage water; but he agrees with Aristotle that fright and overwork and bathing in cold water are especially detrimental to little girls, hindering their growth, mentally and physically.

The author of a modern book on the history of children's diseases, "Pediatrics of the Past," Dr. Ruhräh, compares Bagellardus' book with the little advertising books gotten out by druggists today, and calls attention to the use of fresh blood, especially that of little children, as a remedy for leprosy and many other diseases. In the tale, *Der Arme Heinrich*, by Hartmann von Auer, a little girl offers all her blood to cure Heinrich's leprosy. Mead calls attention to the story of Balyn and the damoyssel in Malory's "*Morte D'Arthur*," chapter XIII,² and compares it with the story of Amis and Amiloun in which there are two

¹ The Countess of Medici writes to her husband Lorenzo that their little son, Piero, is teething, and has eczema because of poor feeding by his wet nurse.

² Mead, William E., Notes on "Malory's *Morte D'Arthur*," 1897, p. 266. One old tale says that Constantine the Great had been advised to bathe in the blood of three thousand children, but that he refused the remedy.

brothers, one of whom was cured by the sacrifice of the two children of the other. (These children, however, were miraculously brought to life again.) Baths in the blood of children were thought to be specific for the rejuvenation of elderly people. Marsilio Ficino (1433-1499), recommends this treatment for senility along with elixir of gold.

VIII. HOSPITALS IN CARE OF MEDICAL WOMEN

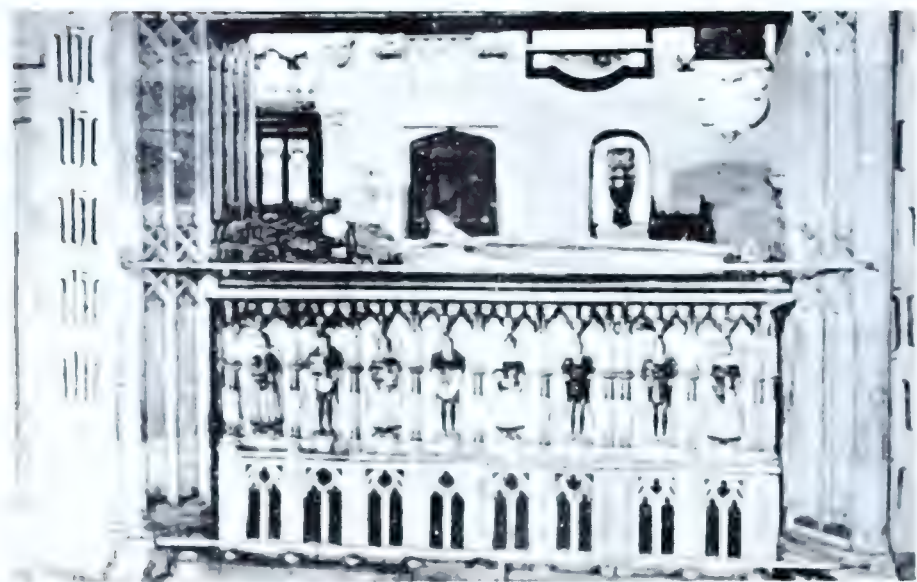
THE fifteenth century may have been picturesque, but for most people it was far from pleasant or comfortable. Suffering, starvation, crime, war, pestilences, and sudden death were the common lot of all classes, regardless of sex and station. It is not difficult to understand why the medical women of the time did not try more openly to improve these conditions, or why they did not see that it was worth while for them at least to make notes of their practice. They were discouraged and afraid of publicity. The women who were practicing medicine during this century were doing it very quietly, and asking no rewards except, perhaps, a seat beside the Blessed Virgin in heaven. This was their great hope; it was what gave zest to whatever work they found to do.

But there were hospitals in this century built and managed by women. Some of them are still in use. Mention has already been made of that of Isabella of Spain at Santiago. Another beautiful one is that of Beaune, in the champagne district of central France, which was built by Guignonne de Salins and her husband, Nicolas Rollin, in 1443. Another was built by the Duchess of Suffolk, Chaucer's daughter-in-law, at Ewelme in England. Another, that of Margaret Beaufort, at Westminster, London, has already been mentioned. Each was carried on for years by its founder, and was naturally vastly more comfortable than any of the great public hospitals, such as the Hôtel Dieu, in Paris, and the Santo Spirito in Rome.

Perhaps the most elaborate of these private hospitals was that at Beaune. Its long traceried windows were filled with stories in stained glass, high ceiling made good ventilation possible, and its many stoves down the center of the long wards assured a certain amount of comfort to its patients and attendants. Opening from the wards was the chapel, a gem of architecture, reputed to contain a piece of the True Cross, along with the costly relics of saints and martyrs, including many bones of St. Ursula's eleven thousand virgins. Over the altar hangs an old



THE HOSPITAL OF THE DUCHESS OF SUFFOLK, EWELME,
ENGLAND—15TH CENTURY.



TOMB OF THE DUCHESS OF SUFFOLK.

Dutch painting of the Last Judgment, and through the open doors the patients today can hear the pealing organ and the sweet songs of the sisters. The refectory still has its long table, set with pewter dishes, and its great fireplace, which must have been a boon in winter. The mattresses, pillows, and coverlets were at the time of its opening much more comfortable than any in the homes of the patients. One ward, equipped with twelve carved bedsteads with fine curtains, was set aside for the dangerously sick, who were to receive "maternal care." The nobility were cared for in a ward with only two beds. All of this was in great contrast to the Hôtel Dieu in Paris, where rich and poor, sick or dying, were laid side by side on vermin infested beds of straw.¹

The cloisters and gardens at Beaune, the deep well in the court with its wrought iron top, the roomy kitchen with its two chimneys, even the lavatories, and the pharmacy were all in keeping with the artistic tendencies of the Renaissance. Here the doctors and nurses could provide tempting food for the patients, and could compound their own remedies. Unfortunately, the hospital now has none of its original books; but the copper kettles, the pewter bowls, the majolica drug-jars, and the stills and mortars of the fifteenth century are still in use today.

The first six Béguines, who came when the hospital opened in 1452 to act as nurses under a "superior" named Sister Alardine Gasquière, served under a hard task-mistress, who ruled with an iron hand for eleven years. Medical and nursing work were done by the sisters in rotation, three years at each task. Pity, chastity, and obedience they had vowed; but even from among the nobility there was no lack of applicants for their positions, despite that the work was very hard, especially in times of famine, pestilence, and war. The sisters were taught obstetrics by their superior; and from her also they learned the diagnosis and treatment of all diseases.²

The hospital of the Duchess of Suffolk, was at Ewelme, one of the prettiest of English villages, in the Chiltern hills on the Thames. It is in a very different style of architecture from those of France or Spain,

¹ In Nutting and Dock's "History of Nursing" (vol. I, pp. 300-310, 1907) there is a description of the old Hôtel Dieu in Paris, where, in the fifteenth century the nurses evidently prescribed and cared for the patients, prepared the medicines, washed the bed clothes in the Seine, and meekly bore their long hours, poor food, punishments, and everything else ignominious, all for the sake of gaining credit in heaven. The hospital windows were seldom opened; its beds were dirty; its walls covered with vermin; and the odors from the patients were so frightful that the head nun was obliged to make her daily visits with a perfumed handkerchief held to her nose.

² Wright, Thomas, "Hospitals and Sisterhoods," pp. 106-115.

but no less interesting. The duchess was the wife of Thomas Chaucer, son of the poet, a highly educated woman and very wealthy, the parish church of Ewelme being part of her dowry. She died in 1475, and her effigy bears on its left arm the Order of the Garter, being one of only three women ever so decorated. She was more fortunate than her friend, the Duchess of Gloucester, who was accused of being a witch because of her knowledge of medicine and astrology. Her "accomplices" were beheaded; she was obliged to walk for three days, barefooted, through the streets of London, and then to serve a life sentence in prison.

Dr. James J. Walsh¹ mentions several rich Italian women besides the sainted Catherines who devoted themselves to the care of the sick and built hospitals and asylums. There was Benedettina Grimaldi, "self-denying, chaste, amiable, charitable, a munificent patroness of the Ospedale di Pammatone," who devoted herself to cases of the plague and leprosy. Leprosy was becoming a disease of the past, however, because of the segregation of patients in just such leper asylums as this of the Grimaldi. In Genoa there were Argentina Spinola, Violanta Doria, and Isabella Fiasco, all of whom devoted themselves to prisoners and to sick sailors in the port.

In the public hospitals of Italy the patients possibly received more medical attention than in the private hospitals. Of the latter Clay says,² "It is rarely recorded that the custodian of the sick was a licensed doctor, although the absence of the title *medicus* does not prove that the master, or abbess, was ignorant of medicine." Every fifty years or so a physician might be mentioned by name in the records as visiting the hospital; the master, or abbess, was supposed to visit the patients twice a day.

In England it was the custom for a time for the queen to bestow hospital "sisterships" on her ladies in waiting; they were deemed thus to be settled for life with congenial work and under slight discipline. In 1465 an English woman was appointed proctor-for-life at St. John's Hospital, in Canterbury, and skilled women from among the common people were chosen "watchers." In this century also women were appointed to be managers of some of the almshouses. Alice, of St. Leonards, in 1416, was a distributor of alms; and Ann Medica, in 1476, was an "officer" in the hospital at York, where there were at the

¹ Walsh, James J., "The Century of Columbus", 1914, p. 325.

² Clay, Rotha Mary, "The Mediaeval Hospitals of England," 1914, p. 149.

time 224 adult patients and 23 children. The Church supported these hospitals, which also received money from wills. In 1408 Gower left money to the patients as well as to the sisters of five London hospitals, including St. Thomas, Southwark, where many years later Florence Nightingale first organized the training of nurses.

In the English hospitals of the fifteenth century, the patients at first were laid upon pallets of straw; but, by 1491, they had feather beds on wooden bedsteads, and coverings of fur. We read that occasionally the beds were examined for vermin by specially appointed men or women. Most of the hospitals were dedicated to women saints, St. Margaret and St. Katherine being the most popular. The resident women doctors wore black or gray costumes like those of the monks or brethren; their hair was cut to the middle of the neck, but not shaved, and they had enormous hooded cloaks, and bonnets with wide flaring white wings. Sometimes they received a dole of five shillings for a new kirtle.

As for treatment in these hospitals, we have already seen that the sick were treated heroically. Osler¹ says that according to the blood-letting calendars five quarts of blood might be taken from an epileptic in a fortnight. The average man, however, was bled or purged according to the advice of the astrologers.

IX. WOMEN OF THE NOBILITY AND MEDICINE

WE can hardly fully understand the fifteenth century if we do not glance at some of its medical books written by men writers, particularly those which were dedicated to women. It was a common thing then for artists and writers to dedicate their work to some aristocratic patroness—who was often hard pressed for the means with which to repay such devotion. Caxton, the great English printer, printed more than seventy books.

Most early printed books were extremely moral; but Caxton wrote for the laity, and his books are seldom pious. One, a book on hygiene, is of direct interest to us. He prints rules for exercising the muscles; tells his readers how to comb their hair so that evil vapors will be driven up through the scalp and scattered; advises them not to lie in bed too long, for "even metal rusts when it rests in water" and "stynketh when it rests too much." He gives rules for walking, for playing ball,

¹ Osler, William, "*Incunabula Medica*", p. 7.

wrestling, stone hurling, jumping. Food, he says, should be eaten slowly, "not too much meat," and only a small amount of liquid taken with meals. He hits out against the small waists and slender hips of fashionable ladies; and speaks loudly against the trailing of their gowns in the filth of the streets. In his "Sayings of the Philosophers" he argues against Socrates, who denounced the Greek women of his own time. Caxton says proudly, "The wymmen of *this* countrie are now right good, wise, humble, discrete, sober, chaste, obedient to their husbands, true, steadfast, ever busy, never idle, temperate in speaking, virtuous in all their workes,—or at least they should be."

On the Continent, in 1470, Bartolomeo Montagnana wrote his "*Concilia*," containing the descriptions of three hundred and five "cases," a book to be used as examples by physicians in diagnosis and treatment. Manfred, a professor in Bologna, prepared a book containing thousand questions and answers, such as "women doctors might wish to know." But the most important of the writers of that day, Gian Matteo Ferrari da Grado,¹ was physician to the great Francesco Sforza of Milan and his Countess, Bianca Maria, and to the Este family at Ferrara, when Isabella, the future duchess of Mantua, and Beatrice of Milan, her sister, were children. For their mother, Leonora, he wrote a book on gynecology, which became very popular with the medical women. He still believed, as Galen did, that the uterus was bifid and a part of the vagina, and that in the horns of the uterus there might be five embryos at once. It is more usual, however, he says, "to find one in each horn and one in the center." The ovaries were not supposed to be a part of the organs of generation; and it was believed that the uterus might become impregnated at a considerable distance, even in a bath. When, in 1430, a professor of anatomy was astonished to find, in the body of a woman at autopsy, a uterus without horns, he considered the occurrence merely an anomaly, and stuck to Galen.

Ferrari's *Practica* (1471) was the first medical book from an Italian press. He wrapped a copy of it in waxed cloth, and sent it humbly to the then reigning Duke of Ferrara, as a present to the Duchess. Ferrari discusses the possibility of diagnosing pregnancy by the urine. His own belief is that the color of the urine is an indication even of the sex of the baby; but he doubts if it is a part of the scheme of God to permit mortals to determine this before the ninth day. For the treatment of prolapsus uteri, Ferrari directs the midwife to elevate

¹ Ferrari, Henri-Maxime, "*Une Chaire de Médecine au XV^e Siècle*", 1889.

the patient's hips, replace the uterus, and hold it with a tampon soaked in wax and shaped like a long cone. Hernias were to be treated by a truss held in place by plaster.

Unfortunately for Ferrari, just as he was beginning service for the Duchess Bianca Sforza, the plague broke out and he fled the city. It took him years thereafter to win his way back into her favor; but, when the duchess had a severe attack of asthma, for which he gave her some relief, she reinstated him. He says that he also cured the French king, Louis XI, of hemorrhoids; but does not give his treatment for either of these cases. It was not usual for physicians in those days to visit the patients for whom they were prescribing. When Ferrari, on rare occasions, did have occasion to visit the Duke it was with proper dignity. He was accompanied by a student or two, a boy to carry a torch of incense to burn before his nose and a lemon to hold at his mouth in case a contagion existed; another boy carried a bag of remedies. His prognoses were always "in the hands of the Lord." "Let the Lord take the patient if it pleases Him," was his pious prayer. Ferrari died in 1472. He left part of his fortune to his nephews and divided his library between them and the hospital at Pavia; his house was to be used by "three good students who did not study law," and the furniture was left to his wife.

Some years later Benedict of Nursia, "*physicus illustrissimus*," dedicated a book on hygiene on diet to his "most intelligent ladies," Isabella and Beatrice D'Este. This was the first medical book to be published in Rome; for some reason it has become one of the rarest of incunabula.

Another medical man who dedicated his books to a woman patron was Cornelius Agrippa (born 1486), physician to Louise of Savoy, mother of Francis I of France. He was interested in human magnetism; and was also an ardent believer in the goodness and innate superiority of women. For Louise he wrote on "Female Preeminence, or the Dignity and Excellence of that Sex above the Male."

X. SURGERY IN THE 15TH CENTURY

LITTLE progress was made in surgery for two hundred years after the time of Guy de Chauliac, except in the treatment of gun-shot wounds. Hospitals were not as a rule equipped to secure either clean-

liness or light in their operating rooms; and the instruments in use were large and clumsy. Blood-letting, tooth-pulling, cauterizing, the lancing of abscesses, the setting of bones and the dressing of wounds were done out in the wards by men or women attendants. Wounds were treated by either the "wet" or the "dry" system, according as to whether the physician followed Lanfranc (cabbage leaves), or copied the Arabs (applications of dry cloth and hot stones). Travelling "wound-surgeons" attended their patients out of doors. These worthies sometimes carried a monkey on their packs to attract attention.

Surgeons in general were looked down upon by university men, and in London, in 1435, they were forced to form guilds for self-protection. If celibates, they were permitted to attend the universities, but could not receive a degree. In 1493, the barbers united with the surgeons because, in 1461, they had been forbidden to do any major surgery.

Army surgeons, however, were very well paid for their services. Thomas Morstede, surgeon to King Henry V at the great battle of Agincourt, in 1415, received twelve pence a day, while his twelve assistants each received six pence. This was good pay, for at that time a day laborer received half a penny a day. When Henry took his chief physician, Colnet, to France he was given three archers as a body guard. All received the same wages as the surgeons. Ship surgeons received ten shillings a month and their living. All of this personnel was under the supervision of the physicians of London, who were themselves governed by a Rector of Medicine with two surveyors of the Faculty of Physic and two Masters of the Craft of Surgery. After 1423 the Board was entirely clerical, under the direction of the physicians of Humphrey, Duke of Gloucester, and of Henry VI.

Each of the instruments used by the surgeons of this century, gynecological speculums, tenacula, forceps, curets, bone-saws and trephines, hooks with sharp teeth and saw edges, could be used in many ways. A new rule provided that, if a midwife was not able to accomplish the birth of a baby, she should summon a strong surgeon for help. Together they then inserted a speculum into the vagina "so long as to reach the top of the uterus". This worked a sort of wooden clamp, or dilatable frame, which had a double ratchet, like a book press. The speculum itself was spoon-shaped, and the dilator was self-retaining. After this instrument was properly placed, hooks and knives and slings were used



A SURGICAL OPERATION OF THE 16TH CENTURY WITHOUT
ANAESTHETICS.

A woman surgeon acts as assistant. Evidently an imposter is performing the operation purporting to be the removal of a stone from the forehead. (Painting by Jan Steen, in the Prado Gallery.)

in demolishing the infant and delivering it peacemeal. If the placenta was adherent it was removed by long spatulae, and then, as the helpless patient sat on the birth-stool, with a funnel in her vagina, fumigations of smoke or steam were directed into the uterine cavity. Not until Ambroise Paré, in the sixteenth century, were more humane methods of surgical treatment undertaken.

That the quacks despised the surgeons of the fifteenth century, and vice versa, is seen in George Eliot's well-known story of *Romola*. A quack who is about to be shaved, arrogantly refuses to allow the barber-surgeon to class him with Antonio Benevieni, the greatest master-surgeon of Florence. He says that surgeons are merely carpenters to mend broken limbs, or tailors to sew up wounds, or butchers to carve away excrescences, not men of science like himself and Hippocrates and Galen and Avicenna! Then the barber retaliates by telling the boastful quack of a conspiracy on foot against him, because people believe that he pounds up toads, and makes salves of worms, and pills from the dried livers of rats, mixing them all with his own saliva while uttering blasphemous words. The quack is so frightened by these stories that he offers to sell all his wares cheaply to the barber and to leave Florence at once.

It is a curious fact that during the fifteenth century certain surgeons who wrote books on surgery did not know how to set bones. Others who were excellent teachers wrote nothing, relying upon their pupils to keep their memory green. Thomas Morstede, for example, was both an excellent surgeon and teacher, but he wrote nothing. The German Army surgeon, Heinrich von Pfolzspeundt, who wrote a book on fractures in 1460, could not reduce the simplest dislocation or do any major surgery. His forte lay in extracting arrows, treating powder burns, and probing for bullets. For a styptic he used lime, vitriol, aloes, and nut-galls. He poured hot oil into wounds, believed in laudable pus, and never tied an artery. From wandering Italians he had learned how to make artificial noses. Brunschwygk, on the other hand, who wrote the "*Buch der Wund Artzeny*" (1497), though an army surgeon, did no major operations except amputations; but he did set broken bones, and he wrote the first account of gunshot wounds to appear in the German language.¹

¹ Baas, op. cit. p. 245, "*Dis ist das buch der Cirurgia.*" Garrison, p. 137, tells us that this Jerome Brunswick was an Alsatian army surgeon. Amputations were rarely done at this time except for gangrene.

It is probable that women shirked surgery mainly because they were afraid of the consequences if a patient should die after their operation. For the same reason, fear of the imputation of witchcraft, they dared not perform version on a child lest it should be born deformed or dead. These may well have been the reasons why, even in normal obstetrics, women were deteriorating in skill, and calling on surgeons for help when they should have relied upon themselves and have aided one another when necessary.

A glance at the list of the earliest printed and illustrated books on surgery shows that between 1478 and 1580 the anatomy of Mundinus was so popular that it was published twenty-five times, each time with the same illustrations. In 1471 came the first Venetian edition of the "*Fasciculus Medicinæ*" by John of Ketham. This book contains articles on uroscopy, blood-letting, and surgery, and also the first illustrations (wood-cuts of course) to appear in any printed medical compendium. Garrison (op. cit., p. 145), notes that none of its pictures were new, or from nature. All were purely traditional, like the "zodiac man", the "blood-letting man", the wound-man, and the gravid-woman. Sudhoff thought they showed the almost stationary character of the mediæval doctor's mind. But, so far as the first printed book was concerned, they probably meant simply a copying of pictures which had previously appeared in the manuscripts. We must remember that there were no proprietary rights to these pictures, and they were used indiscriminately by all authors.

Fortunately, there were by this time artists of talent, Leonardo da Vinci in particular, who had studied human anatomy, and corrected the old drawings. Even before Vesalius, there were anatomists who made illustrations of muscles and internal organs more correct than ever had been seen before. Leonardo alone made seven hundred and fifty separate sketches of muscles and of internal organs, many of which are now in the art museums of England and the Continent.

XI. MEDICAL INCUNABULA

WHILE, during the fifteenth century, new worlds were being discovered by Columbus and the Cabots, and new mechanical inventions devised by Leonardo da Vinci and others, it was the invention of printing by Gutenberg and a host of followers that changed all the conditions of learning.

We are told that one hundred editions of medical calendars were

issued from various presses before the end of the century.¹ Osler found thirty-three fairly new and somewhat original medical books, out of a total of two hundred and seventeen on all subjects, printed before 1481.² By 1502 there had been printed one hundred and six books on medicine alone. Some of these books, like the famous "*Hortus Sanitatis*", were anonymous. It is quite possible, therefore, that this latter book was written by a woman, as was the "*Hortus Deliciarum*" of Herrad of Hohenburg in the twelfth century. Its delight in healthy living and its quaint wood-cuts might well come from a woman's heart and hand; and both text and pictures remind us of Hildegard's "*Mystisches Thierbuch und Artzeneyenkunde*", with its colored pictures of real or fanciful animals and plants used in medicine.

Many of these early medical books were in folio size and beautifully bound in leather. Their illustrations were taken without thanks from older books, for there was no such thing as copyright in those days. A surgery of 1517, the "*Feldbuch der Wundt Artzney*" by Hans von Gersdorff, contains illustrations which had appeared originally in a manuscript by Saint Hildegard, and later in John of Ketham's "*Fasciculus Medicinæ*" (1471). Sudhoff³ dates the "phlebotomy man" back to a manuscript dated 1400; and the "zodiacal woman" to an Ulm manuscript of 1404. The "disease man" comes from the early thirteenth century. His body is covered with the names of various diseases, cerebral disorders in a halo around his head, gout hanging to one foot, sciatica to the other. The usual illustration of a "pregnant woman" shows her squatting uncomfortably, her arms raised as in prayer, her abdomen open to show an infant *in utero* resting its chin on its tiny hand. To show the importance of the color of the urine⁴ Ketham's "*Fasciculus*" shows us a series of twenty flasks of urine on a shelf, each indicating by its tint some disease, rose colors indicating fever, black, a disordered liver, etc.

The conventional often pictured "wound man" is bristling with swords and daggers, and bruised by stones and clubs. Inside his chest we see a very small heart on a long stem extending from his throat to the bottom of his ribs. His diminutive brown liver is partly overlaid

¹ Ballard, James F., "Medical Incunabula", *Boston Med. and Surg. Jour.*, vol. 196, 1907.

² Osler, William, "Incunabula Medica", 1923.

³ Sudhoff, "*Geschichte der Chirurgie*," p. 55.

⁴ Charles Singer edited a new edition of Ketham's "*Fasciculus*" in facsimile with translation and notes, in 1926.

by a small stomach at the right. The "sick man" lies in bed, surrounded by attendants, men and women, who examine his body and feel his pulse. The "phlebotomy man", already mentioned, was always shown covered with punctate spots. He is as old, as an illustration, as the hey-day of Persian or Greek medicine. The interesting "zodiac man" who is reprinted in calendars even today, has the ram at his head, the bull behind his neck, a lion at his stomach, and a perfect menagerie of other animals resting peacefully on other parts of his body.¹

¹ Here is a partial list of the medical books printed before 1501, taken mainly from Osler's *"Incunabula Medica"*. Osler mentions 106 in all.

(1454, The first book, the Bible, printed by Gutenberg at Mainz.)

1457, *Kalendars*, Mainz, for bleeding and purging according to astrological figures.

1471, Nicolaus' *"Antidotarium"*, Venice.

1471, Ferrari's "Practice".

1471, Mesue's "Practice". Padua.

1471, Ketham, *"Fasciculus Medicinæ"*. Venice.

1472, 1480, *"Regimen Sanitatis"* (in German and in Latin).

1472, Peter of Abano's *"Conciliator"*. Mantua.

1472, Avicenna's *"Canon"*.

1472, Bartholomeus de Glanville. *"De Proprietatibus Rerum"*. (Twelve editions before 1500.)

1472, Bagellardus, twenty-two chapters on the diseases of children.

1473, Serapion, on medicine.

1474, Bartholomeus Metlinger, on "Diseases of Children". (The first English medical book.)

1474, Salicet's "Surgery". Bologna.

1474, *"Regimen Sanitatis"*. (Latin)

1474, Placentius, *"Surgery"*.

1475, Benedict of Nursia's *"Concilia"*.

1475, *"Regimen Sanitatis"*, at Augsburg. (No less than 250 editions before 1500, printed in all languages.)

1477, Ortolf of Bavaria's *"Arzneibuch"*.

1477, Michael Scott's *"Physiognomia"* (contains some gynecology).

1478, Dioscorides on drugs, Siena.

1478, Celsus' *"De Medicina"*.

1478, Guy de Chauliac's *"Surgery"*, Lyons.

1478, Mondinus, *"Anatomy"*.

1480, Galen. (part only)

1480, Aristotle, *"De Secretis Mulierum"*.

1480, Pliny, *"Natural History"*.

1480, Hippocrates, *"Aphorisms"*.

1480, Albertus Magnus, *"De Secretis Mulierum"*.

1480, Arnold of Villanova's *"Commentary"*. Augsburg.

1480, Rhazes, *"Continens"*.

1481, The Phlebotomy Man. Louvain.

1489, Salicet, *"Summa Conseruationis"*.

1490, Avenzoar, *"Adjumentum de medela et regimine"*.

1490, Averrhoes' *"Colliget"*.

1490, Galen. (9 books on anatomy, 17 on physiology, 6 on pathology, 16 on the pulse, 30 on pharmacy, 14 on therapeutics.)

1491, Ketham, *"Fasciculus Medicinæ"*. (Illustrated)

1492, John of Gaddesden's *"Rosa Anglica"*.

Chapter VIII

The Sixteenth Century

I. GENERAL CHARACTERISTICS OF THE CENTURY— THE RENAISSANCE AND THE REFORMATION

THE sixteenth century was surprisingly important for its developments in geography, astronomy, art, music, and drama. If adventurers like Columbus¹ (1446-1506) and the Cabots (John died in 1498, Sebastian in 1557) had not discovered the coasts of the Americas, it would probably have been only a short time before Magellan (1480-1521) or Drake (1540-1596) would have done the same sort of thing even more magnificently. In printing, the early men like Gutenberg and Caxton were followed almost immediately by the prolific Aldines and Elzivirs. In art, painters like Fra Angelico were the forerunners of still greater painters—Michael Angelo (1475-1564), Raphael (1483-1520), Titian (1477-1576), Holbein the younger (1497-1543), and others. Many a minor dramatist was lost to sight when Shakespeare (1564-1616) began to bring out his immortal plays at the very end of the century, while archaic music became obsolete with the commencement of the work of Palestrina (1526-1594).

The fifteenth century has been called the end of the Middle Ages²; the sixteenth was the commencement of a new era, an era of free thinking and independence in politics, religion, and science. Singer dates the "renaissance" in medicine from 1543, the year in which Vesalius (1514-1564) published his anatomy, which was also the year in which Coperni-

¹ Dr. Haggard points out that Columbus sailed the seas to the west not wholly for gold, but also for spices, which were chiefly to be used in medicine. In his hunt for the famous unicorn's horn and the toad stone, he found the route to lands of tobacco, potatoes and tea.

² Adams, Charles Francis, "Columbus and the Spanish Discovery of America," 1892, p. 11. "During the life and death struggle of the sixteenth century, therefore, the whole weight of the discoveries (in America) was thrown against religious and political freedom. It only just failed to turn the trembling scale." The main crusade against the Protestants began in 1520. Philip II said that it was better not to reign at all than to reign over heretics.

cus (1473-1543) brought out his great work on the "Revolution of the Heavenly Bodies". To medical practitioners the years before 1543 were, as Singer says, like a swamp into which a debased religion might sink, but from which science could not have emerged had it not been for a few brave men bent on the correlation of the facts of their own observation. Among these medical men were, as we shall see, Vesalius, Paracelsus, Ambroise Paré, and Rabelais. (There was still, however, no medical woman who could equal Trotula or Hildegard in original investigation or who could write like Christine de Pisan.)

When Martin Luther nailed his ninety-five theses to the door of the castle church in Wittenberg, in 1517, when Copernicus, in 1543, announced a new theory as to the structure of the universe, the end of dogma and of unquestioned faith in tradition, had begun. To the women of the Renaissance new ideas and religious freedom appealed as strongly as to the men, and while the heavy hand of the Inquisition fell on men and women alike there was no flinching by the so-called weaker sex when it came to the endurance of physical suffering for heresy.

Despite the ban laid by the Church in 1542 against any books unauthorized by itself, "nothing," as Ranke¹ says, "can be more striking than the change in the intellectual spirit in Italy, as we approach the end of the sixteenth century . . . Ardor for the . . . imitation of the ancients had passed away . . . a zeal for independent investigation, especially in natural sciences, took the place of antiquarian scholarship. . . but this was severely repressed by the ecclesiastical rulers. . . who ruled society."

Symonds² says although the Popes were endeavoring to check the free spirit in Italy, the task was impossible. "The corruption of Italy was only equalled by its culture, its immorality matched by its enthusiasm." The Inquisition founded in Spain in 1478 by Torquemada, with the permission of Queen Isabella, for the extermination of heretics, was now turned against Jews and the new Protestants. The Moors had been expelled from Granada. Now the Jews were ordered to leave Spain with scarcely the clothes on their backs, even their bodies likely to be ripped open at the ports to see if they had swallowed money or jewels. Eight hundred thousand Jews left Spain at this time, twenty thousand of whom died in the harbor of Naples and as many more in the harbor of Genoa, of plague. At the same time such Turks and

¹ Fisher, Geo. P., "The Reformation," 1894, p. 412, quoting from Ranke, "History of the Popes", vol. I, p. 493.

² Symonds, J. A., "The Renaissance in Italy, the Age of the Despots," pp. 372 et seq., 1888.

Arabs as were in Italy were expelled or killed by the hundreds. Forty-one old women and idiots were burned to death as witches at Como, for the witch mania waxed more fiercely than ever all through this century. Money could buy off these victims in certain cases.

Not only those who upheld the Reformation, but such great Catholic rulers as Lorenzo de' Medici of Florence, and the writers, Guicciardini (1483-1540), and Machiavelli (1469-1527), called Rome a "sink of iniquity", and frankly ascribed the moral depravity and political decay of Italy to the influence of the popes. Street stabbings, poisoned wine, wholesale slaughter and torturings were looked upon as one would at a show on the stage. There were, on the other hand, good popes as well as bad; and, in all honesty, it should be said that, during the reign of Leo X (1475-1521), the first Medici pope who ruled from 1513 until his early death, Rome was so free from poverty, plague and war that it almost doubled in population. This prosperity was definitely checked by the invasion of the Bourbons and Germans in 1527, when Pope Clement VII (1475-1534) was besieged in Castle Angelo, and the city and country were devastated by their armies. England was so calm during Leo's pontificate that it was possible for Sir Thomas More (1478-1535) to dream and write of "Utopia". He published his book in 1516, sincerely believing that the religion of Rome was the direct gift of the Apostles, and the pope its spotless exponent. His refusal to renounce the papacy in 1535 cost him his head, and no country has yet become Utopia.

The outstanding cultural current of the sixteenth century was that for religious and moral reformation, for new mental freedom. Martin Luther was born in the little town of Eisleben, in Germany, in 1493, the son of a slate cutter. He went to school in Eisenach, studied law at Erfurt, lectured on Aristotle to the students and then became a monk. In 1517 he openly dared to protest against the sale of indulgences by the Dominican Tetzel for the sake of procuring an archbishopric for himself; and, as has often been told, nailed his ninety-five theses, or reasons for his protest, to the door of the castle church in Wittenberg, where he was then professor of philosophy. In 1520 he published his tract on the "Babylonian Captivity of the Church of God," for which he was excommunicated by Leo X, and his writings burned. In retaliation, Luther promptly burned the papal bull. In 1521 the Emperor, Charles V, proscribed him, and he was imprisoned for nine months, during which time, still defiant, he translated the New Testament into German.

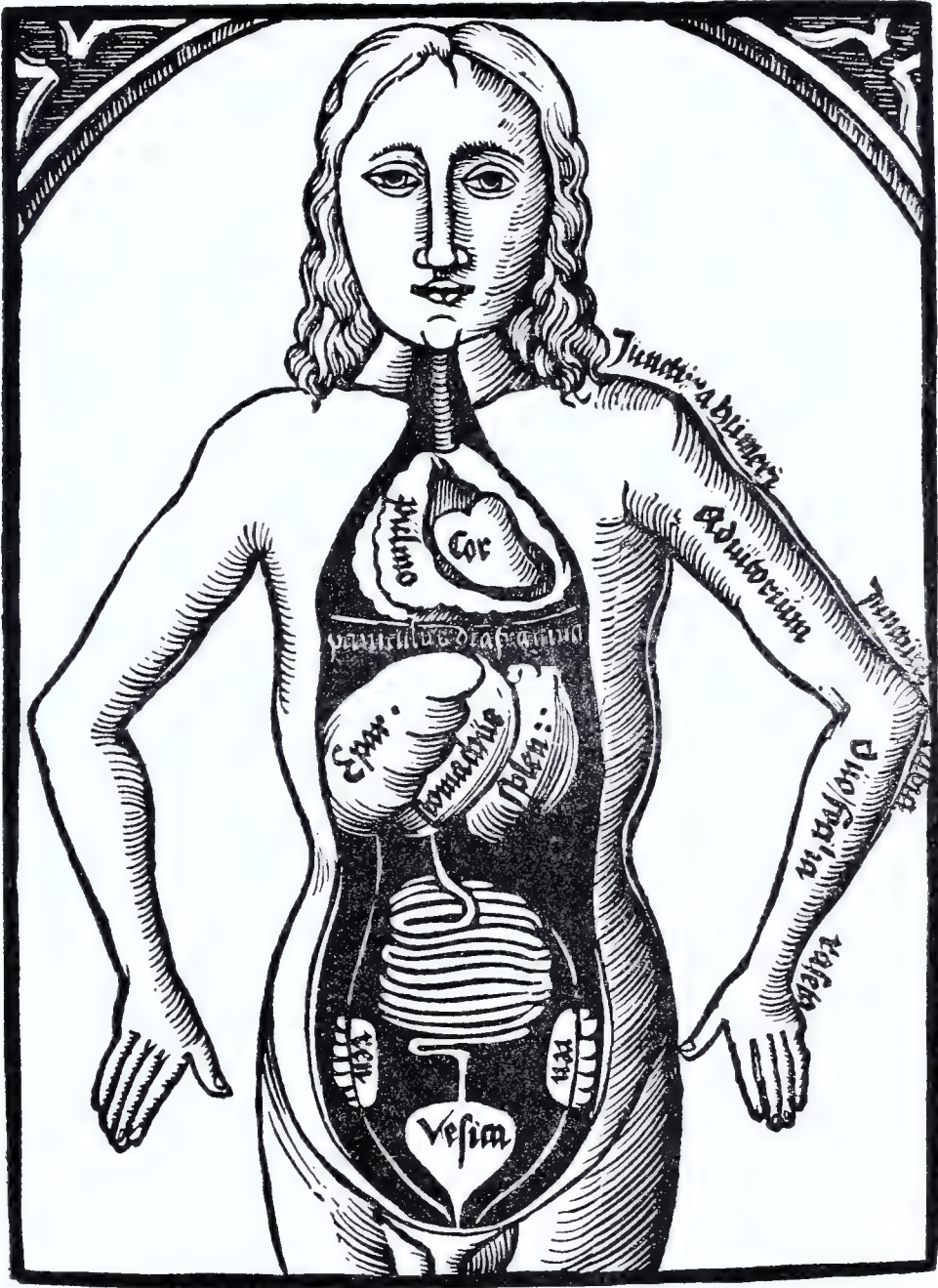
Twelve years later he finished the Old Testament, thus giving to his country the purest High-German it had ever had; and, as did the English with their "King James' Bible", fixed the literary language of his country for all time. In 1524 he renounced his monk's garb for matrimony. His wife had been a nun. They had five children. In 1527 he was writing poetry and hymns, some of which he set to music. Among them "*Ein feste Burg ist unser Gott*" easily takes first place. His motto throughout his life was, "I can do naught else. So help me God"; and, though frequently denounced as a heretic, he died in his bed in 1546.

John Calvin (1509-1564) was a Frenchman from Noyon in Picardy, and like Luther, a university man. In 1528 he became a Protestant as well as a militant worker for the Reformation. He published his "Institutes" at Basle in 1536. His controversy with the medico-religious Spaniard, Servetus (1511-1553) resulted in various accusations of heresy against the latter and finally in his death at the stake in Geneva.

It was Servetus who was the first to discover the true circulation of the blood, and the functions of the lungs. He was born at Tudela or Villanova; studied law and theology and medicine at various universities in France and Spain; and practiced medicine at Avignon and Vienne in southern France, where he published a book on medicinal syrups. After a few years he became convinced of the errors of both the religious and the scientific teaching of his time, and, in 1553, published his "*Christianismi Restitutio*." After this he had no peace from either Catholics or Protestants. He was burned in effigy with his book in Lyons; escaped to Naples, where he was "exposed" by Calvin; brought back to Geneva, tortured and burned at the stake there, all before his book was one year old; one of many martyrs to the cause of truth.

It was in 1546 that Servetus discovered the lesser circulation of the blood. Cesalpinus (1524-1603) discovered the greater circulation in 1560; and Sylvius (1478-1555)¹ and Fabricius of Aquapendente (1537-1610) discovered the valves in the veins before 1574, thus antedating even the birth of Harvey by four years. Servetus, in his book on the "Trinity," had fearlessly announced that Galen was wrong in his ideas of the circulation of the blood. He showed for the first time that there was no communication between the two sides of the heart, and that the blood flowed from its right side to the lungs, and returned to its left

¹ "Sylvius" was Jacques Dubois in common parlance. He was the teacher of Vesalius.



AN ANATOMICAL FIGURE FOR STUDENTS. (16TH CENTURY.)

From "Margarita Philosophica" by Reisch, 1496. (Courtesy of the British Museum.)

side to be sent to all parts of the body. Harvey, who somewhat later studied in Italy and France, also knew these facts; but he dared not publish them in England during the reign of his kings, James I and Charles I, because at that time non-conformists of any sort were at best misunderstood, at worst persecuted, banished, imprisoned, or even killed. The story of Servetus helps us to understand the risks that the scientific researcher faced in these centuries, and the hesitancy of women at putting into print what they may have discovered or learned.

Much of this fear to contradict old beliefs in medicine and science was caused by the edicts of the church, which still made the teachings of Galen a matter of veritable religious dogma, although Galen himself had laid no claim to infallibility and had urged his followers, not merely to think, but to experiment and clear up doubtful points. In the sixteenth century, however, if a student wished to see a body dissected, he generally was obliged to go to Italy, cadavers being more easily obtained there than in other countries. At the Italian universities where, as we have seen, women were welcome students, dissections on criminals were permitted three times a year. This was made a gala occasion. Such was the fear of finding something in a body not according to Galen, that, when Rabelais (1490-1553) went to Montpellier in 1530 to study, he declared that "God must be trembling with wrath at man's audacity in dissecting a human being." Even Sylvius, the great teacher of anatomy in Paris, dared not controvert Galen; and we have seen what happened to Servetus for daring to state hitherto unheard-of facts about the pulmonary circulation in contradiction to current theological beliefs.

No medical faculty of the sixteenth century would defend any of its pupils against persecutions for heresy, although the Teutonic countries were somewhat less severe in this respect than the Latin nations. For all that, Padua, which was under the protection of the Venetian Republic, was very liberal, the teaching at its university being upheld by public sentiment. It was therefore in this century the most popular of all the universities, especially with medical students.¹ Not only medical students but patients flocked to Padua from all over Europe as they had to Salerno in the twelfth century. At this time the universities of Italy, all sixteen coeducational, outnumbered those of all the rest of Europe put together. In England medical studies were not very popular, either in Oxford or Cambridge. In 1535, 108 students were graduated from

¹ Rashdall, *The Universities of Europe in the Middle Ages*, 1895, Vol. II, Part I, page 21.



A SURGICAL OPERATION, 16TH CENTURY.

Note the women assistants. (From a contemporary wood cut.)

all the departments of Oxford, in 1566 only 54. Very few were medical students. To practice medicine in London a man had to have a license, which was only obtainable after eight years of study and the passing of an examination before the regents.¹ The result was that the apothecaries, women, and quacks—all without licenses—had the bulk of the practice, both medical and surgical. A law had been passed in 1511 that the Bishop of London, or the Dean of St. Paul's, might examine a medical candidate in the presence of four expert physicians, but a few years later this applied only to men who had studied at the special college founded by Linacre in his own house in 1518 for "doctors and grave men," though probably not for priests.² It was still thought, however, that to have a priest for a doctor was convenient in case of death. Of a law in force about this time, restricting the legal practice of medicine by women, among the poor, Miss Lillian Ping says: "It was not that the poor were to be practiced upon in any wrong sense, only to give them a chance to be treated at all. It was felt that the law weighed heavily on those who practiced folk-medicine, so it was amended to give the poor a chance. It was entitled 'An Acte that persones (being) no common surgeons maie mynistrer medicins outwarde.' They were enabled to cure outward sores by herbs, ointments etc., or stone, or ague by drinks, without being sued under the Act. In the following century the College of Physicians, then in Warwick Lane, built a dispensary for the relief of the sick poor."

There was unquestionably a pride and distinction in wearing an Oxford or Cambridge gown and hood, and the round cap of the medical men was as distinctive as the square cap of the masters of the humanities. At the Parisian universities Rashdall says every student wore a long black cloak or cape, and was tonsured. The stylish trunk hose, puffed sleeves, pointed shoes, and red or green boots of the period were considered "indecent, dishonest, and dissolute." There were two students in medicine to every fourteen in theology. We need hardly be surprised to learn that women were not clamoring for admission. The text books were still the works of Rhazes the Persian, and of the Arabs, Haly Abbas and Avicenna, and of Avenzoar, whose work on the "Conservation of the Human Body" was by this time being printed in a small and handy pocket volume. Averroës, the exponent of Aris-

¹ Rashdall, *op. cit.*, Vol. II, part II, pp. 455, 646, 637.

² Osler, William, "Essay on Thomas Linacre," 1908.

totle, was popular in all the universities of Europe; as were the Salernitans, Guy de Chauliac, Lanfranc and Saliceto. Nor was it difficult to obtain copies of those still older classics, Oribasius and Dioscorides. Of books on gynecology those of Cleopatra and Soranus, Rufus and Trotula, were being reprinted.

Among newer medical books of interest to women were several written in part for them. There was the great work of Ambroise Paré, first printed in 1550, which contained several chapters on obstetrics; and the "*Fabrica*" of Vesalius printed in 1543, eagerly sought by women, surgeons and barbers. There were several on the whole art of midwifery, with illustrations. There was the Regensburger "*Hebammen Buch*", 1555, and Röslin's "*Rosengarten*", 1513, in German, and the English translation of the latter. Also Raynald's "Byrthe of Man-kynde," 1545, and the older, but often reprinted, books of John of Arderne and Bernard Gordon. Thomas Phaer's "Booke of Children", 1545, on infant feeding, sore throat, bowel complaints and the itch, was as useful to women doctors as it was to university students. There was also a new German book on pediatrics by Felix Würtz (1518-1574), in which there is a special chapter for nurses, warning them not to scrub a baby's mouth till it bleeds, and insisting on a prescribed diet for infants. For Italian medical women there was the new book of Scipio Mercurialis on obstetrics, published in 1572. For the French, Henri Estienne published a new book on general medicine in 1560, mostly culled from Hippocrates and Galen, but quoting somewhat from Roger Bacon and Albertus Magnus, thus introducing several modern suggestions of a rather psychological type. Last, but not least, tho not specially for women, were the refreshingly new denunciations of Galen by the explosive Paracelsus.

II. SANITATION IN THE 16TH CENTURY

IN the sixteenth century the average duration of life was eighteen years. Fully one-half the population of every country died under the age of twelve, and sixty percent of those died before their fifth year. There were, however, signs of progress in sanitation both in England and on the Continent. Wooden houses were being replaced by dwellings half-timbered and half-brick, or plaster, or stone. Glass windows were becoming popular; although Erasmus deplored them because they kept bad smells inside the house, such as came from "leakage of dogs and men, ale-droppings, scraps of fish, and other abominations not fit



A 14TH CENTURY HOSPITAL—ROTHENBURG, OB DER TAUBER.
(This is the "*Hegereiterhäuschen*," or house of the superintendent of the
hospital.)

to be mentioned."¹ More, in his "Utopia," gives us an idea of the filthy streets of the London of his time, and his ideal city, with wide and clean streets, "even twenty feet wide," bordered with gardens, where all houses should have chimneys to carry the smoke away from the eyes of the inhabitants, and garbage should not be dumped in the gutters.

More himself occupied a beautiful house in London, the famous Crosby Hall, now the property of the Association of University Women, standing near the Thames in Chelsea, in the heart of the old city; it had long windows and a big fireplace in the hall, many bedrooms, and every convenience of its day. Like other homes of the rich it was surrounded by a garden and orchard, protected by a high wall. Not only in England, but all over Europe, in this century, palaces were being built for comfort as well as for beauty, with elaborate staircases, audience chambers, dining rooms well supplied with silver and pewter and glass dishes, and private dressing rooms and elaborate bed-chambers, all filled with massive carved furniture. For the poor, of course, these luxuries were still unobtainable.

As we have already noted, conditions were such as severely to restrict the number of physicians and surgeons who practiced among the poor. Yet there was never more need of doctors than in the sixteenth century. Plagues still swept through Europe as frequently as in the past. The sweating sickness appeared five times between 1486 and 1551, the epidemic of 1529 breaking out spontaneously in hundreds of localities at once. In England, the Black Death, which had carried off one-third of the inhabitants in 1478, reappeared in 1564, 1574, 1578 and 1593, and often in the following century.

William Bulleyn, a botanist-physician who died in 1576, having lived through the reigns of Mary and Elizabeth, has left us a description of some of these epidemics, and the usual treatment² of their victims; and among the pictures punctiliously painted at this time are death-bed scenes, road-side agonies, lepers begging at the doors of hospitals, and victims of the plague being carted off for indiscriminate burial.

¹ Berdan, J. M., "Early Tudor Poetry", 1920, p. 25.

² Sir Thomas Elyot's (1490-1546) "Castel of Heith," published in 1534 and six times reprinted, was written in English, much to the annoyance of the Oxford doctors of his time, both because he was not a physician and also because his book was in English. He was trying to teach the common people how to avoid the plague, and he said, "The Grekes wrote in Greke, the Romaines in Latine and Avicenna in Arabike." Though his book contained nothing new it was a good seller. Thomas Paynell re-translated the old "*Regimen Sanitatis*" of Salerno to try and teach better hygiene to everyone. Both of these men were typical of their period.

There are also lively interior scenes showing the birth of babies, usually called poetically "The Birth of Mary" (or of Elizabeth or John or Jesus), in which, with entirely unconscious anachronism, the costumes and furniture of the period are shown. There are also outdoor scenes showing promiscuous bathing in small pools,¹ and baptism and circumcision scenes which give opportunity to study child anatomy; and saints shown in agonies of torture made as frightful as possible, and pictures of the Inquisition showing the awful instruments which were universally used to inflict pain upon malefactors, heretics and witches.

Such pictures are really tales in color; and by them these sixteenth century artists reveal the psychology of the period as well as the unsanitary conditions of its life. Among the many representations of medical and surgical clinics there are several showing patients standing in large basins, having their legs scarified or their veins bled by women attendants. Other patients are writhing, firmly held, while their boils are being lanced, or fake stones removed from their foreheads, or teeth extracted. The surgeons, both men and women, are generally quite distinguishable from the nurses and servants. Some of the most amusing medical scenes are depicted in the open air in the midst of merry-makings on a village green; others are of elaborate rooms such as would be appropriate for physicians' offices. Privacy and signs of sanitary conveniences are generally lacking, although there is no lack of homely attention to the immediate needs of the sufferers. The general lack of clinical accuracy in diagnosis is revealed by pictures purporting to represent examinations of patients; the latter are generally thoroughly clad or, if they are in bed, are closely covered with blankets. Diagnosis was still, as usual, merely the study of a flask of urine.

The scientists seemed half afraid even to speculate on the causes of the epidemics of the time. Nevertheless, Fracastor (1484-1553),² published his new theories of the contagion of typhus fever, "*Febris Ungarica*," in 1546. His idea was that contagion was due to a miasm, consisting of morbid "seeds" or "*seminaria*," there being male and female seeds, or at least male seeds planted in female soil. Fracastor

¹ Garrison, p. 172, says that gonorrhea was so common in 1520 that many public baths were suppressed.

² "The Scientific Position of Girolamo Fracastoro, 1478 (?) - 1553," by Charles and Dorothea Singer. *Annals of Medical History*, vol. 1, no. 1, 1917. This most valuable article has 163 references on contagion, from its first conception as a miasm carried long distances by air, or even conveyed by the glance of the sick person, to the theories evolved by Fracastor.

is chiefly remembered not for his primitive germ theory, but for a long poem which he wrote on the ravages of syphilis. Several other doctors wrote short rhymed effusions on this same subject, the disease being almost universal in the sixteenth century. Massa (who died in 1569) called the disease by Fracastor's title, "*Syphilis sive Morbus Gallicus*". Leonard Fuchs (d. in 1566), the botanist, thought of it as connected with plants; but Sir John Harrington (1561-1612), (whom Garrison¹ calls the "witty, graceless godson of Queen Elizabeth"), believed, as did many other writers of the time, that the soldiers of Columbus had caught the disease from the Indians in America, and then had spread it through Europe by their loose living. He also translated the "*Regimen*" of Salerno, calling it "The Englishman's Doctor, or the Schole of Salerne" (1609). It gave remedies for all contagious diseases.

"Six things that here in order shall ensue
Against all poysons have a secret power,
Peare, Garlicke, Reddish-root, Nuts, Rape, and Rue,
But Garlick's chiefe; for they that it devoure
May drinke and care not who their drinke do brew;
May walke in aires infected every hour."

These books on syphilis reached many readers who took their teaching to heart; but at the same time itinerant quacks loudly advertised their own useless remedies. Then as now faith played its part in cure. If a doctor boasted of the curative properties of the finger-bone of a saint, the patient was not curable until the bone was at her bedside. Erasmus laughed at the credulity of the sick, and said that there were enough fragments of the true cross in various churches of Europe "to make a loading for a large ship". But this credulity was not confined to any one country or race. Cellini rushes off to Loreto on the east coast of Italy to beg the Virgin to save him from the plague, and the following year to Naples to beseech Saint Lucy to cure his attack of conjunctivitis, she being pleased with presents of glass eyes as thank offerings, and yet even then Paracelsus was using mercury successfully in the treatment of syphilis.²

¹ Garrison, page 166.

² The ordinary physician was still cupping, blistering, bleeding, leeching, and puncturing his patients to "let out the poison". Guy Patin bled an old man of eighty eleven times in six days, because he believed in taking blood "without remorse, without mercy, and without measure". Cordamus and Pegelius in this century also practiced transfusions of blood from the veins of one person to another. It is not said what their mortality was.

III. MEDICAL WOMEN IN ELIZABETHAN ENGLAND

IN view of the practical knowledge of medicine and sanitary science shown by several European queens, it is rather humiliating to find those of England paying more attention to the religious quarrels in their domains—and to flirtations. The amorous Henry VIII had studied pharmacy and often mixed medicines in his own laboratory as a pastime between his six love affairs; but his medical knowledge did not extend to obstetrics. His Queen Catherine in eight pregnancies had only one living child. Anne Boleyn had but one living child, the future queen Elizabeth, and two miscarriages. Jane Seymour died of fever soon after her son, Edward VI, was born. He died at the age of 16. Queen Mary, Catherine's daughter, was more concerned with her own health and the combating of heresy than the health of her people. Queen Elizabeth, who had been sickly from her eleventh year, had to submit to so many bleedings and purgings that it is a wonder that she lived to reign at all. Elizabeth was, perhaps, the most thoroughly educated woman of her age. She spoke several languages, and wrote Latin and Greek easily. She had dabbled in medicine, preferring to prescribe for herself. She believed and upheld her adviser, Dr. Dee, in all his predictions from the stars, and also surrounded herself with medical men and astrologers from the Continent.¹ She believed in taking enormous doses of medicine, and in being copiously bled for all indispositions, whether suffering from anemia or jaundice or ulcers of the leg. Sir Arthur Keith tells us that her apothecary bill was "tremendous"; but for all that she refused many of the more disgusting remedies of her age. He doubts if she had inherited syphilis from her father, as many people hinted; but she may have had anemia, a poor stomach and liver, a chronic leg ulcer, septic teeth, rheumatism, possibly angina pectoris, and a very unstable nervous organization.² She encouraged scientific investigations, permitting the

¹ In 1559 a copy of the *"Fabrica"* of Vesalius was presented to Queen Elizabeth. It contains her own portrait.

² "The Private Character of Queen Elizabeth", Frederick Chamberlin, 1922, p. 93. An interesting episode is indicative of Elizabeth's attitude toward women doctors. A skilful herbalist named Margaret Kenwix was practicing in London without a license; the College of Physicians wished to have her punished. Elizabeth upheld the woman and over-ruled the College, much to their anger. On the other hand, on three other occasions, the physicians had their way. Herbalists, and irregular practitioners, were allowed to practice if they could obtain a license from their Bishop; they could then hang out banners or signs at their own houses, and usually had many patients. They prescribed and sold herbs, gave medicated baths, and applied plasters. Certain entire families, like the Colots, were famous for their lithotomy operations; while other surgeons were known as bone-setters or "couchers for cataract". There was no law whatever against practicing medicine as a charity.

College to dissect human subjects (four felons a year); and, like her father, had especially studied poisons, their symptoms and antidotes.¹ For many years her private physician was a Portuguese Jew named Dr. Lopez. He was killed for treason in 1594.

In view of the medical interests of Queen Elizabeth it is not surprising that other women of the aristocracy were to be found who had studied the medical books of the time, and were happy to be of service to the sick. The three daughters of Sir Thomas More "were educated in physic and in the Scriptures." One of them was the famous scholar, Margaret Roper,² her father's companion in many of his undertakings; and her teachers, Erasmus and Pole, said that she was one of the best scholars they had ever known. In Canterbury, her husband's home, she was revered for her knowledge of medicine and her sympathy and skill in sickness.³ The fame of the four daughters of Sir Anthony Cooke spread all over Europe. One of them, who became the mother of Sir Francis Bacon, "was skilled in medicine" and "cared tenderly for the poor and sick wherever she found them." Lady Burleigh, another of the Cooke sisters, is said to have astonished her husband with her ability in treating the poor and sick. Another Cooke sister became the mother in law of the famous Sir Thomas Hoby, whose wife, as we shall see later, was an army surgeon.

The private diary of Lady Anne Clifford, born in 1590 and married to Richard Sackville at the age of nineteen, mentions that her mother "was a lover of the study of medicine and the practice of Alchimy. She prepared excellent medicines that did much good to many; she delighted in distilling waters and getting chymical reactions with her extracts." Lady Anne, during her second widowhood, recalled many of her mother's prescriptions, and used them with the sick among the servants of the castles and villages that formed the family estates.

Grace Sherrington (1552-1620), a relative of the Cliffords, married at the age of fifteen to Sir Anthony Mildmay, already had a "good knowledge of physick and surgerie as well as household arts." She writes that she spent her time in music, prayers, studying the "Herballs" and "books of physick," and in "ministering to one or other by the direction of the best phisitions of myne acquaintance; and even God gave a blessing thereunto." Years later this Lady Mildmay's daughter wrote in her

¹ "Shakespeare's England." A. G. Doran, 1916.

² Kavanagh, Julia, "The Women of Christianity," 1852.

³ Cf. Tennyson's "Dream of Fair Women." Margaret Roper died in 1544, and is buried in Chelsea.

diary that her mother spent a great part of her days "in the search and practice of man's body-drugs, preparation of medicines and studying the signs of disease." Lady Mildmay's portrait, painted in 1613, shows her holding a prayer-book, with an open book on simples and two retorts and stills on a table beside her. Her epitaph in Apeltorpe Church describes her at length as "virtuous in every way, charitably helpful with Physick."

Among the private diaries of the sixteenth century that of Lady Hoby is the most explicit in its medical details.¹ Born in 1571, she was taught to read and write, play the alpharion, manage a household, do surgery, compound salves, etc. She was a strong Puritan, loved long sermons and believed in deep introspection. By the time she was twenty-five years old she had been married for the third time, and had charge of a large estate upon which were four mills, two hundred houses, a rectory and church, etc. Her third husband was Sir Thomas Posthumous Hoby, the son of Elizabeth Cooke, one of the famous literary daughters of Sir Anthony Cooke. He was a great traveler; had lived in Italy as representative of the English Queen, and had translated Castiglione's "Courtier" into English. A few extracts from Lady Hoby's diary, beginning Feb. 4, 1599, gives us an insight into her busy life. She says: "At five o'clock I dressed my patientes and then returned to private prayer." Feb. 5. "After private praers I went to dresse my patientes and did eate my breakfast." This was her usual morning program, and frequently she "dressed her patientes" twice a day. Feb. 10. "The Lord's day, dressed patients after church in the morning, and after the sermon dressed the other poore folkes." She often wrote sermons herself, prayed in private and in public, and talked "with religious zealots." At another date she says: "After I had praied privately I dressed a poore boies legge that came to me, and then brake my fast with Mr. Hoby; after, I dressed the hand of one of our servants that was verie sore cutt. After that I dressed one of the mens handes that was hurt, lastly praied, and so to bed." Jan. 4, 1602, she writes: "I was sent for to Trutsdell to the travill of my cousine Jasons Wiffe, who that morninge was brought to bed of a daughter." On July 26, 1601, she says: "I had a child brought to see that was borne at Silpho...that had no fundament [anal opening], and no passage for excrementes but att the mouth; I was earnestly entreated to Cutt the place to se if any passage Could be made, but, although I Cutt deepe and searched, there was none to be

¹ "The Diary of Lady Hoby", edited by Dorothy M. Meads, 1930.

found." Obviously Lady Hoby was a daring surgeon thus to operate on a newly born baby. As she had exciting experiences in the army of James I, her story will be returned to later.

Elizabeth, the Countess of Kent, was another woman of the period noted for her medical and obstetrical skill. She wrote and published a medical book, "A Choice Manual, or Rare Secrets in Physic and Surgery", which became quite popular. Undoubtedly not all the women who practiced medicine were as expert as these. In Robert's "History of the Southern Counties" is the following note: Lyme in 1569 had no medical practitioner, and even fifty years later there is not yet a man doctor in the town," but there is a record that "a female practitioner deformed Sir Symonds D'Eures when he was brought into the world." A little later we find that this child was placed under the care of a "female practitioner" of Dorchester, Mrs. Margaret Waltham.

It is possible that medical women of England were as a whole less well educated than were those of France and Italy. It was out of the question for women, even those of the nobility, to attend lectures at Oxford or Cambridge; and to take private lessons from noted university medical men was uncommon as well as expensive. Nor was it only a question of women. Rashdall¹ says that in England medicine in the sixteenth century was "beneath contempt," the doctors caring only for venesections;² and that in general the conditions of life were abominable. Women laced their bodies so tightly that it was almost impossible for them to breathe or digest their food. They ate a highly spiced and ill-balanced diet, had very poor teeth, as black as Queen Elizabeth's, and limited their exercise practically to occasional horseback riding.

In a contemporary poem by Samuel Rowlands, printed in 1617, the bride says:

"In wit to men we are inferior far,
For arts of learning and Ingenious things,
No rare inventions in our braynes there are,
That public profit to a kingdom brings.
'Tis they that must all callings execute,
And wee of all their labours reape the fruite.

Let not wife's boldness power unto her take,
For she that thus hath oare in husband's boate,
Let her take breech, and give him petti-coate."

¹ Rashdall, Hastings, "The Universities of Europe in the Middle Ages", 1895, vol. II, p. 712.

² See letter by Sir Clifford Albutt in "The Private Character of Queen Elizabeth", by Frederick Chamberlin, 1922, p. 81.

But, on the other hand, such an observant writer as Shakespeare refers casually to women doctors as though they were not at all unusual in England in his day. In "All's Well That Ends Well", (Act II, Sc. I), Lafeu says of Helena's medicine:

..... I have seen a medicine
That's able to breathe life into a stone,
Quicken a rock, and make you dance canary
With spritely fire and motion....
King: What "her" is this?
Lafeu: Why, Doctor She: my lord, there's one arrived,
If you will see her.....
I have spoke
With one that, in her sex, her years, profession,
Wisdom and constancy, hath amazed me more
Than I dare blame my weakness.

And later Helena tells Lafeu (l. 104):

Gerard de Narbon [a physician] was my father;
In what he did profess, well found.

And she adds that her father on his death bed gave her all his prescriptions, and that one of them is exactly what the King needs. The King, however, feels that, since the most learned doctors and the congregated college can not "ransom nature", it is foolish to rely upon her empirics. She replies that her remedy is worth a trial, and can do no harm, for—

He that of greatest works is finisher,
Oft does them by the weakest minister. (lines 139-140)

And finally the King does take her remedy, saying—

Sweet practiser, thy physic I will try. (l. 188)

Shakespeare's "Helena", this daughter of a poor but well educated physician, is considered by many his finest female character. "The noble mixture of spirited firmness and womanly modesty, fine sense and true humility.....are worked out with the tenderest partiality."

In "Twelfth Night" (Act III, Sc. IV) Fabian, believing that Malvolio is insane, says, "Carry his water to the wise woman" (i.e. for examination). Brandes says that several passages in this play are probably taken from Shakespeare's personal experience.

Shakespeare's knowledge of plants and medicines is seen in many of his plays. He evidently had heard all the stories of the mandrake, of poison drinks, and knew of the value of common herbs as used by the women in the country. He gives a list of some of these in "Romeo and Juliet" (Act IV, Sc. III), when the nurse gives Juliet the Friar's sleeping draught, and in "Othello" (Act III, Sc. III), when Iago

names the soothing remedies that will not put Othello to sleep, because Desdemona has bound her bewitched handkerchief around his aching brow.

Shakespeare's son-in-law, Dr. John Hall, was a "*medicus peritissimus*," though not a university graduate or a surgeon. In mentioning plague, malaria, rheumatism, gout, catarrh, palsy, paralysis, hysteria, whitlow, boils, carbuncles, and the fifteen different diseases in "Troilus and Cressida," the poet quite unostentatiously gives us a picture of the medical knowledge of the late sixteenth and early seventeenth centuries.

IV. THE 16TH CENTURY ELSEWHERE IN EUROPE

ALTHOUGH the condition of medical women in France in the sixteenth century was worse than ever, they were still allowed to attend confinement cases, to give gratuitous attention to charity patients, and to nurse their own families.

Yet here, as in England, there were notable exceptions to this generalization. Félix Plater tells us that, when he was a student at Montpellier, in 1550, women "assisted at dissections even when the cadaver was a man."¹ And there were, as in the centuries preceding, well educated women in royal circles; and wandering scholars continued to visit the great castles, bringing news of the latest discoveries in science, astrology, and alchemy. Renée of France, daughter of Anne of Brittany and Louis XII, was said to have been as learned as any man of her time. Marguerite of Angoulême, sister of Francis I, was able to speak as many languages as Queen Elizabeth, and Hebrew in addition; while her mother, Louise of Savoy, was not only thoroughly educated in literary subjects, but in politics and medicine as well. Catherine de' Medici was said to have become quite skilful as a physician; although Paré blamed her severely for not permitting him to trephine her son, Marie Stuart's young husband, when the operation might have given him a chance to live. Diana of Poitiers, the mistress of Henry II, brilliant, beautiful, learned and rich, accumulated a collection of paintings and books that were the envy of her friends, among them four important medical books by contemporary writers, evidently authors' gifts: Charles Estienne on dissection, 1546; Ambroise Paré on the treatment of wounds, 1551; Thierry de Hery, on venereal diseases; and

¹ Plater, Félix, "*Mémoires*", 1566, pp. 53, 54.

Sylvius, the anatomist, on diseases of women, 1536. The last contained a dedication to herself.¹

Perhaps the most important queen of this century from a medical point of view was a German, Sophia of Mecklenburg, the mother of the famous Christian IV of Norway and Denmark.² She was well educated in all the arts and sciences, including medicine; and, when her husband died, Sophia, with four councillors, was appointed Regent for her young son. Tradition says that when her son was born she threw custom to the winds and refused to allow others than her midwife, nurse, and her husband in the room; but she did not quite dare to forbid *his* eating the pulverized hind leg of a hare, perhaps to shorten her pains. Through her regency her influence was paramount all over Lutheran Scandinavia and among the northern provinces of Germany.

With four councillors to share her problems of state, she found time to nurse her baby, and give special attention to the sanitation of her kingdom. It was as rare for noble women of the northern countries to nurse their babies as to make reforms in hygiene; and, as women then were expected to have a child each year, the graveyards were full of coffins of mothers and of still-born infants and wrongly fed babies. Sophia tried to change these customs, taught birth-control and maternal nursing, and compelled the midwives to study their art so carefully that from her day to this the midwives of Scandinavia have led the world in the prevention of maternal and infant mortality.

Many other sanitary reforms were initiated by this royal mother. She advocated the opening of bedroom windows at night, at a time when windows were seldom opened except to throw out slops or rubbish. All over Europe illegitimate babies were strangled or drowned and thrown to the scavengers: as far as she could Sophia fought the practice. Her people were taught to bathe their bodies frequently, and to kill the lice in their hair with lye and hot butter, not merely to comb them out. Young people were not to drink beer or wine. A well person was not to sleep with a sick one. Fur clothing that had been in a house where there was a contagious disease was to be fumigated over steaming hot cow dung and then sprayed with perfumery. Burial laws were made more strict, and the bodies of those who had died of the plague were

¹ Bauchart, Ernest Quentin, "*Les Femmes Bibliophiles de France, XVI, XVII, XVIII Siècles*", 1886, vol. I, pp. 79, 171. Lipinska, pp. 184-185. R. H. J. Scoutetten, "*Histoire des Femmes Médecins*," 1868. Leroux de Lincy, "*Mémoire sur l'éducation des femmes au moyen âge*", 1808. Boileau, E., "*Le Livre des Métiers*," Chap. XCVI, Art. 4.

² Gade, John A., "Christian IV of Denmark and Norway," 1928.

to be destroyed. Through the influence of this sanitary pioneer, public and private hygiene slowly but surely went forward, not only in Scandinavia but all over Europe.

Margaret of Austria (1480-1530), daughter of Maximilian I, who was appointed Regent in the Netherlands to care for all her orphan nieces and nephews, is said to have superintended the daily hygiene of all the children even to their baths and their medicines when they were sick. Her own baby had been born dead after a labor of "twelve days,"¹ and her chief lament was that she had no more children of her own. To her court Anne Boleyn, the future mother of Queen Elizabeth of England, had been sent as a girl of seven to learn manners and "all science and religion," and the story goes that Margaret superintended her medicated baths, personally mixing all sorts of herbs in the steaming water,—hollyhocks, pellitory or pyrethrum, fennel, onion, camomile, plantain, water-cresses, veronica, elder, avens, soap-wort, gilly-flowers, daisies, wild-parsley, and scabiosa. Margaret died in 1530 in Ghent from an infection in the foot, having accidentally cut her heel with a piece of glass. When the foot had become gangrenous, the surgeon gave her such a large dose of opium before amputating it that she never awoke.²

During the Renaissance a few Italian women were more keen for study than ever before. Among them were certain women noted for their medical skill. Cassandra Fedele,³ often called "the angel of Venice", was still alive early in this century and at the head of the Dominican hospital there. She also taught at the university of Padua, where she held a "whole settee", theology, philosophy, music, and medicine; but her main work was for "fallen women", for whom she provided dowries and self-supporting occupations. Another medical woman of Venice was Isabella Cortese, died 1561 (Harless, p. 180), who wrote books on chemistry and alchemy as well as on medicine. One was entitled, "*Secreti medicinali artificiosi ed alchemici*", published in Venice, 1561-1565. Schacher says this work was translated into German and published in Hamburg in 1565-1592.⁴

¹ Quoted from Le Maire, Jean, "Couronne Margarite, The First Governess of the Netherlands", p. 27. Also see "Margaret of Austria", by Eleanor Tremayne, 1908.

² Taine told a friend that the Dutchmen of the Renaissance were stiff, frigid, with no sensibility or sentiment, dull, insipid, "perfect turnips, Sir, perfect turnips." They had, however, wisdom and contentment, unlike the Italians, who were not happy unless they were sinning. They gave us the microscope and some of our greatest anatomists. In the pictures by Dutch painters their physicians are always well dressed and dignified.

³ Kavanagh, page 145.

⁴ "Secrets" dealt with both medicine and cosmetics, and was published in Venice when its prosperity was only slightly past its height, when Titian and Tintoretto were still painting the portraits of its most beautiful women.

Lucrezia Borgia (1480-1519), daughter of Pope Alexander VI, had the distinction of having a book on gynecology dedicated to her. Her life is an epitome of her age. Married at the age of thirteen to the lord of Pesaro, and having no children during four years of marriage, she was next married to Alonzo of Aragon, a Spaniard, by whom she had one son. He was killed by her brother two years later. She was again married at the age of twenty-one to Alfonso D'Este, Duke of Ferrara, by whom she had four children.¹ She was clever and well educated, and knew most of the scholars, scientists, poets, and artists of her time. The gynecology above mentioned was by Ludovicus Bonacioli, and was titled "*Enneas Muliebris, Ad Lucretiam Estensem Borgiam, Ferrariæ augustissimam ducissam*". It professed to answer the what, why, how, and when, that she and her friends wished to know about the physiology of sex, generation, the causes of anatomical anomalies, the cure of menstrual pain, the ways of hastening labor, the prevention of the death of the fetus, the care of children, and the prevention of sterility. The author said that he had consulted all previous medical books for the sake of making his duchess an expert in such medical matters. It contained, however, no allusions to difficult or abnormal labor, no illustrations, no condemnation of old bad methods of treatment. For all that it was interesting, and of some use to mothers.²

The thirteenth century "*Regimen Sanitatis*" of Salerno was still being recited by the Italians, for its rhymes were easy to remember; and Frascator's poem on syphilis, printed in 1546, was popular in learned circles. Artists and sculptors were picturing death-bed scenes. Mothers were being delivered either on their backs with their hips elevated, or on the old Hippocratic stool, the midwife resorting to all sorts of tugging and pulling before calling the surgeon with his long hooks and barbaric tongs. If a baby survived its birth, it was as a rule put out to be nursed by some professional wet-nurse. This added to the high infant mortality, "so high," says Froude, "that the population was fairly stationary because of wars, pestilences and these infant deaths." Unfortunately, the books of the day for midwives, though numerous and

¹ Lucrezia died in childbed with the fourth baby.

² Bonaciolus, Ludovicus, "*Enneas Muliebris, ad Lucretiam... Ferrariæ Ducissam De uteri partiumque eius consectione... Qua multa variaeque de conceptione, uteri gestatione, abortu, partu, obstetricatu, puerperio, nutricum & infantium cura, aliq. huiusmodi copiose & erudite differuntur. Alia etiam quaedam obiter physica, medica, & philologa, id est, jucunda cognitu continentur.*" First published in 1502, and frequently thereafter by Wolff, Spach, etc.

good sellers, did not help much in reducing this mortality. Whenever the plague broke out all the wealthy rushed to the hills to live until danger was over, for there was no effective isolation of patients except to shut them up in their homes until the entire family lay dead within. The only preventive used was to bathe one's body in vinegar, breathe aromatic herbs, lay a falcon's feather upon the first bubo or over the heart, and then resort to prayer. In 1522 there was a serious outbreak of the plague in Rome. To stop its ravages a bull was sacrificed in the Coliseum, after which priests and choristers paraded the streets carrying images of the Virgin and crucifixes. Little children, bare to the waist, walked in the procession for hours beating their breasts and begging God to spare them. Syphilis and small pox and scrofula were also endemic.

In Tasso's "*Gerusalemme Liberata*," which dates from this century, occurs another instance of a woman doctor curing the hero. Erminia, the heroine, cures Tancred with remedies which she had raised in her own garden or had bought for the purpose, having learned from her mother how to use all kinds of herbs for healing wounds and quieting pain.¹

67. E però ch'ella de la madre apprese,
Qual più secreta sia virtù de l'erbe
E con quai carmi ne le membra offese
Sani ogni piaga, e il duol si disacerbe,
(Arte che per usanza in qual pàese
Ne le figlie de i re par che si serbe),
Vorria di sua man propria a le ferute
Del suo caro signor recar salute.
68. Ella l'amato medicar desia:
E curar il nemico a lei conviene: '

Brama ella al men che in uso tal sia vóta
Di sua virtude ogni erba ed ogni nota.
69. Sì che per l'uso la feminea mente
Sovra la sua natura è fatta ardita;
E di leggier non si conturba o pave
Ad ogni immagin di terror men grave.

Medical women were not rare in Spain and Portugal during the sixteenth century, for women doctors were appointed by the government of various Spanish cities to examine prostitutes. They were trained especially for this work, since it was at a time when the wealth of the Indies was pouring into the Peninsula, with all the profligacy that accompanied it.

¹ Tasso (1544-1595) *Gerusalemme Liberata*, Canto VI, 67, 68, 69.

There were a good many famous women professors at the universities, the most important of whom were Beatriz Galindo of Spain at the beginning of the century, and Oliva Sabuco of Portugal at its end. But, among others worthy of mention, were Isabella Losa of Cordova, Aloysia Sigea of Toledo, and Juliana Morella, a graduate of the university of Avignon.

Beatriz Galindo (1473-1535) has been already mentioned in our discussion of the fifteenth century. Her picture in the "*Diccionario Manual Enciclopédico de la Lengua Española*" (1909) shows a cheerful and highly intelligent face in the costume of a nun.¹

Isabella Losa had the distinction of being a doctor of theology as well as of medicine. Françoise, daughter of Antoine de Lebrix, was another women equally learned, in fact she often substituted for her father in his chair at the university of Alcalá. Of Aloysia Sigea we know that she taught Latin, Greek, Hebrew, Syriac, and Arabic, in addition to doing medical work at the court of Portugal. She is said to have written "several works." (Lipinska, p. 159)

The most important of all these women, however, was Oliva Sabuco Barrera, born in Alcares near Toledo, in 1562. Her father was probably a doctor. We do not know where she was educated; but we do know that she wrote an important book on the nature of man, a philosophical discussion of the functions of the human body, and the effect on men and on animals of pain, fear, and other mental states.² This book was twice printed in Spain in 1587-1588, but as its contents brought down on its author the wrath of the Inquisitors, all copies of it were destroyed—save two copies, with many erasures, which escaped. Naturally these persecutions seriously interfered with the author's further work. This first book was, however, republished freely in the seventeenth century. The first volume is in Spanish. It considers man in his relation to the world, his health, his old age, and certain political and social reforms. The second is in Latin, and is in the form of a wide-ranging dialogue between two shepherds, one of whom quotes freely from Hippocrates, Galen, Plato, and Pliny. They talk of the effect of the passions and emotions on the health, of the possibility of the existence of souls in plants and animals, of man's remorse for sins and

¹ See Lipinska, page 158. Also Rashdall, vol. II, page 79.

² "*Nueva filosofía de la naturaleza del hombre, no conocido ni alcanzada de los grandes filósofos antiguos, laquel mejora la vida y salud humana . . . escrita y sacada a luz por Dña Oliva Sabuco de Nantes Barrera, natural de la ciudad de Alcares.*"

his hope of a future life, of the sicknesses which he suffers as the result of chagrin, fear, suspicion, etc. They discuss the plague, and decide that it must be something which is air-borne to the brain, that the brain tries to get rid of it, but, that in so doing, the system loses too much water and heat, death resulting from this destruction of the harmony of the bodily functions. They call this air-borne something a poison, which must be fought with other poisons; and they think that possibly, if the veins to the brain should be ligated, the miasm might be prevented from reaching it. They also discuss maternal impressions, and the effect on the brain of music, sleep, monotony, the moon and the sun. Finally, Sabuco in her own person prescribes safe and sane diets for pregnant women, and for children. She says that the brain and nerves must be kept moist and well nourished. Many of her psychological theories were much too advanced for the Church in the sixteenth century.

V. CONVENTS IN THE 16TH CENTURY

IN earlier centuries, as we have seen, many women were attracted to monasticism as a refuge from the woes of the world. In England, however, by the sixteenth century, the convents and monasteries had either become dissolute and poverty-stricken, and so ripe for oblivion, or else so rich and enviable as to invite confiscation by the Crown. Perhaps the whole history of the Reformation would have been different if Henry's queen, Catherine of Aragon, had presented him with sons rather than with one sickly daughter and several still-born babies. His resentment against the Pope because of the difficulty he had had in gaining his divorce from her made it easy for him, when at last he married the gay young Protestant, Anne Boleyn, to consent to the dissolution of the convents and monasteries of his kingdom. He turned the rich revenues which they had been sending to Rome into his own coffers or into those of his friends.

Few of these religious institutions were spared. The Convent of Saint Bridget at Islesworth on the Thames was richer and more prosperous than most of the others; and, although its inmates went to Holland during the confiscations under Henry, they returned under Mary to find their estates intact. Later these nuns were obliged to move to Portugal; but long afterwards they returned to Devonshire, where they now live. Their "Infirmaria," or head of their hospital, taught the younger nuns whatever of medical knowledge she thought best for the care and comfort

of the sick. She herself visited their patients every day, prescribed and sometimes administered their medicines, and saw that they were clean and warm and properly tended.

Erasmus (who died in 1536) complained with some sadness that the nuns of his day lacked earnestness of purpose; he urged them to follow the teachings of Christ by doing kindly acts rather than to quibble over doctrinal points. He tells married women to love their husbands, to have children, and to be generous to the poor and sick. On the other hand, Furnivall quotes from the Douce Ms. (365, 1. 95), "The Abbaies went doune because of there pride, and made the more covetus riche for a tyme." Of the one hundred and thirty convents and monasteries in England at the beginning of the sixteenth century, only fifteen escaped dissolution during the reign of Henry VIII, and they chiefly by paying large sums of money. Agnes Litherland was, however, reprieved with her convent, because to it belonged the girdle and part of the tunic of Saint Francis, which were of great use to women in labor.

On the Continent, during these troublous times, we find few records of religious or monastic women, except in Germany, where there were thriving convents which became as important under the Reformation as under the Church of Rome. One of the most famous of all the German abbesses was Charitas Pirckheimer¹ who lived at the convent of Santa Clara in Nuremberg, 1524-28. Fortunately, she wrote her memoirs during the stormy period following the Lutheran agitation. A bitter foe of Luther, she was one of a large organization of Poor Clares, so influential politically as to render themselves immune from punishment. Her sisters, Clara, Walpurg, Katherine, Sabina, and Euphemia, were all members of the Order. Their brother, Willibald,² the humanist who died in 1530, was a noted writer. They were friends of Dürer, whose house was across the street from their home. Erasmus knew them well, and said that in Europe or England there was only one family so learned and kind as this, referring, of course, to the family of Sir Thomas More and the charitable works of his daughters. The letters of these good Pirckheimers all show how difficult it was for them to see any religion at all in the new reforms, and, having vowed to follow Saint Clara and Saint Francis, they found it hard to carry on their schools under Lutheranism, although Luther and his friends were dis-

¹ Eckenstein, p. 458.

² Willibald Pirckheimer (1470-1530), the humanist, had a pair of spectacles said to be the oldest in existence. They consisted of two large circular lenses connected by a nose bridge. They are now in the Nuremberg Museum.

tinctly in favor of the higher education of women. The heroism of these nuns was far greater than that of the monks who easily resigned themselves to their fate without compunctions of conscience. It is probable, however, that under the old institutions women would have been much longer in raising their standards of education than under the later foundations. There could have been little freedom and initiative in thought and action when women were kept within four walls and subject to strict routine, day and night.

The most far-reaching influence of any Spanish medical woman of the sixteenth century was probably exerted by a nun, the founder of the Carmelite Order, *Santa Teresa de Jesus*. She was born, in 1515, in the old walled town of Avila among the mountains of central Spain, as picturesque a town as any in Europe. It has many gates, and eighty or more towers of the eleventh century, all standing—1936! Near one of the gates is the house in which Saint Teresa lived for sixty-seven years “conquering self, overcoming all obstacles, accomplishing all good works, and even defying time.” Her “visions” were published about the time of her death in 1582 under the titles “The Way of Perfection,” and “The Castle of the Soul,” and had a wide sale. She studied earnestly how best to care for the sick to whom she was so devoted, “ever utterly unmindful of her own comfort.” There are now five hundred Carmelite convents and monasteries, known as the “White Nuns,” and “White Friars,” which follow her ideals.

VI. SIXTEENTH CENTURY MIDWIVES

THERE is no doubt that, generally speaking, the women doctors of the sixteenth century made as little attempt as the men to rise above a dead level of mediocrity. If there were exceptions, it was in the field of obstetrics, where women showed, as usual, the greater interest and efficiency. The more far-sighted men physicians encouraged and aided their efforts. Andrew Boorde, a famous physician of the time, enlarged upon the miseries women suffered at the hands of incompetent midwives, and urged the bishop to be careful in licensing insufficiently trained applicants. He had himself had a peripatetic medical career, and probably knew little of practical obstetrics, but even that little would have been difficult to glean from his ancient “Woman’s Book,” in its fine print. Its contents were in the main copied from Soranus through Moschion, fourteen hundred years old, full of the same crude details

for removing a dead infant, piecemeal, by hooks, along with some little advice as to versions and other operations.¹

However meagre their knowledge by our standards, it is probable that the midwives of the period were better educated for practical obstetrical work than any of their men colleagues. The most skilful midwives were well paid. Margaret Cobbe, midwife to Elizabeth Woodville, the wife of Edward IV, received ten pounds a year (1470) for her services at a time when a penny was considered quite worth earning. Elizabeth Gaynsford, another royal accoucheuse, received ten shillings for baptizing a baby before its birth, although the efficacy of the act was seriously questioned. Alice Massey, who in 1503 attended Elizabeth of York, the wife of Henry VII, cared for many of the early Tudors. Unfortunately none of these women left records of their obstetric work.

During the reign of Henry VIII Johanna Hamulden was midwife-royal. We have already noted that his first wife, Catherine, had one miscarriage after another, six in all, and three babies who died in earliest infancy. Mary, her only living child, was sickly. Queen Elizabeth, Anne Boleyn's child, had many undiagnosed maladies, as we have seen. Jane Seymour, Henry's third wife, died of puerperal fever shortly after the birth of her baby, Edward VI, and he lived only sixteen years. Catherine Parr, Henry's sixth wife, and widow, died of puerperal fever after the birth of a baby, the fruit of a later marriage. Queen Mary, Catherine's daughter, died childless at the age of forty-two, probably of a malignancy of the ovaries. If these were typical of the obstetrical happenings among the royal families of the day, what were conditions among the general population?

The most noted of the French obstetricians of the sixteenth century was Louyse Bourgeois, friend and pupil of Ambroise Paré, and *accoucheuse* of the Queen. Her books on midwifery published between 1608 and 1653, will be taken up later: here we may allude to her work—a specimen of that of the best obstetricians of her age. She was born just outside of Paris in 1503, was married young, and had three children before she was twenty-four years old. After the death of her husband, realizing that lace-making was not sufficiently lucrative to support her family, she turned to the midwife who had attended her in her own

¹ Blas, Joh. Hermann, *Grundriss der Geschichte der Medicin*, 1876, p. 340, says that the "*Hebammen-Rostgarten*" reeks more with the fumes of smoking hawks' excrement and burnt blood than with the odor of roses. The author advocates pulling a dead infant from its mother by means of powerful hooks in its back or chest and iron tongs.

labors and begged to be taught the art. Soon, by diligent study of recent books on midwifery, and the personal teaching of Paré and several other physicians, she acquired great skill.

Many other women in France at this time were practicing medicine and obstetrics as a charity. Among them was Mme. de Chantal¹ (born in 1572), the daughter of President Frémiot of the Burgundian parliament, and the wife of one of Henry IV's officers, Baron de Chantal. At the age of 28, a widow with four children, she went, with her little

family, to live on the estate of her father-in-law near Dijon. Here she had opportunity to study medicine, and to practice it among the dependents of the great farm. She was careful to burn the soiled rags of the lepers, as well as all the infected dressings from ulcers and cancers. When her friend, the Bishop of Geneva, Francis de Sales, remonstrated with her for exposing herself to contagious diseases needlessly, her reply was to found a house of visiting sisters at Annécý, where she gave herself entirely to such medical charity. She died



LOUYSE BOURGEOIS

in a convent at Moulins in 1641 at the age of sixty-nine. Mme. de Sévigné was her granddaughter.

Harless² (p. 182) tells us of another noted scholar of this century, Marie de Coste Blanche, who lived and taught in Paris. Although physics and mathematics were her specialties, she was skilled in medicine, and probably acted as a specialist in obstetrics. She published a work in 1566 on "The Nature of the Sun and Earth." He also mentions

¹ Kavanagh, Julia, "Women of Christianity", Chapter XI.

² Harless, Chr. Friedr., "*Die Verdienste der Frauen um Naturwissenschaft und Heilkunde*", 1830.

(p. 183) another noted Parisian woman, Marie Romieu, who wrote and taught physiology for girls. In 1581 was published her book on the "Physical Nature of Women," a reply to a satire written by her brother.

Schelenz, in his "History of Pharmacy," points out that there were also many women apothecaries in France during this century. Between 1530 and 1536 laws were passed permitting widows to become apothecaries in place of their husbands, if they were properly qualified. In a medical book published by Bartholomaeus Vogeter in 1541, there is a picture of a woman working in a pharmaceutical laboratory and a man tending a still.

Although in the sixteenth century such books as Röslin's were available in many languages, it is not probable that the average midwife bought them, or even borrowed them. This kept the profession at the low level at which it had stood for so long. By the end of the century, however, Louise Bourgeois, and others of her learning and skill, formed a sort of association, somewhat like those of our present day nurses and doctors, the members of which made rules for their own protection and for the elevation of midwifery in general. In France during this century, however, for the first time women threw off their veil of modesty, and admitted men practitioners into their lying-in rooms; but Wilkewski¹ adds that, as the women worked for smaller fees, they continued to be more popular. In 1560 a statute was enacted in France making it obligatory for practicing midwives to belong to the fraternity of the medical saints, Cosmo and Damien, and to visit their church on the 27th of September each year to pray for help in their work. For this act of devotion, which implied that they had passed an examination, the taxes of candidates were remitted; but they were expected to treat the poor without fees. Naturally, however, neither prayers, oath, nor examinations could raise the status of the really inefficient or unethical midwives. One of their regular duties being to baptize every baby born, dead or alive, under their care, in cases where the baby was illegitimate the midwife was blindfolded so that she might not recognize patient or child at a later time. These midwives were obliged to swear that they would not use abortifacients, or do anything to endanger the life of either mother or child. They also promised to lead a pure and upright life, as in the Oath of Hippocrates, and to attend, wherever possible, the post mortems and dissections of female bodies at the medical school, in order to know enough of female anatomy to be able to act

¹ Wilkewski, "*Histoire des Accouchements*", 1887.

as witnesses in cases of abortion; for even though denounced by the church, abortions were still very common; and lay men and women were often accused of inserting stem pessaries, or of giving poisons, or cantharides, or dried menstrual fluid to women who wished to be relieved of a pregnancy. Illegitimate embryos were, therefore, destroyed at peril to the nurse as well as the mother, since tell-tale scars on the abdomen were more easily prevented than obliterated.

In Germany, in the sixteenth century, there were many successful midwives whose names have come down to us. Among them was Anna Elizabeth Horenburgin, the official obstetrician of Braunschweig, whose services were in great demand. It was for her, and her contemporaries, that Conrad Gesner in 1564 published in his great encyclopedia a chapter on women's diseases, in which he quoted liberally from all the past authorities, including our old friends, Cleopatra and Trotula.

There was also a famous midwife in Havelberg in 1555 named Margarita Fuss, the daughter of a noted noblewoman *accoucheuse*. At the age of twenty-two, Margarita, who had married a worthless wretch, found herself forced to earn her living.¹ She studied with her mother, went to Strasburg and Cologne for further education, and eventually became so famous that she was asked to go all over Germany, Holland, and Denmark for consultations in obstetrics. She was often called "Mother Greta." Being fond of peculiarities of dress, she wore a full red and black striped skirt, and a sort of soldier's jacket like those of the Hungarian Hussars. On her arm she carried a bag with the snake of Esculapius embroidered on it, and in her hand a gold-headed cane. In winter she wore a large cape trimmed with yellow fox fur. She was naturally a notable figure at court, both as physician and midwife, and when she died, in 1626, the cathedral bells were rung in her honor, and her obsequies were carried out with royal splendor.

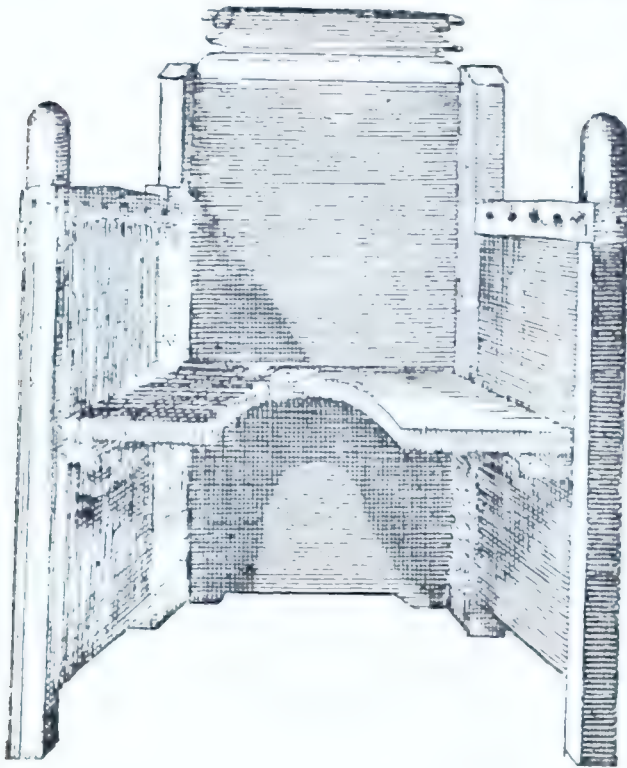
There was also, in 1526, an Italian woman obstetrician in Germany named Fulvia Morata, of Ferrara. She had been educated at the Italian universities, and was sent to Germany as Court *accoucheuse*. So famous did she become that, after her early death at the age of twenty-nine, a school for midwives bearing her name was founded at Bonn.

Harless (p. 158) gives us the names of several other noted German midwives of this century. Eleonora, Duchess of Troppau and Jaegern-dorf², wrote books on remedies and diet in diseases, "*VI Bücher auser-*

¹ Siebold, Edouard Casper Jacob von, "Essay on the History of Obstetrics", 1839.

² We shall return to the Duchess of Troppau and her work in the chapter on the seventeenth century.

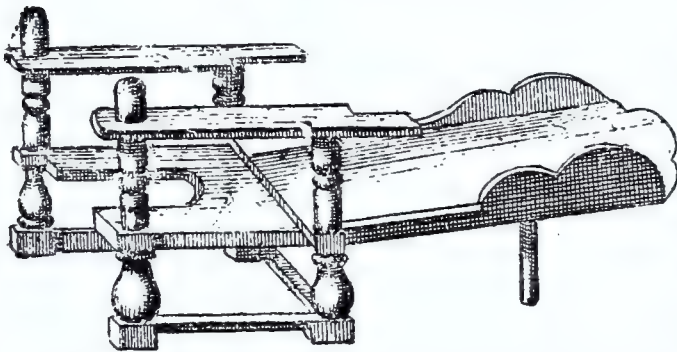
lesener Arzneien und Kunststücke fast für alle des menschlichen Leibes Gebrechen und Krankheiten." These books, first published in folio in 1600, had tremendous popularity, and went through at least five editions, the last of which (1709-1713) had the fantastic title, "Wild Pomegranates for Christian Samaritans, or Secrets of Medicine, Diet, etc., Revealed." Anna Sophia, a princess of Denmark who married the Kurfirst August I of Saxony in 1543, had a famous botanic garden in which



OBSTETRIC CHAIR USED IN THE 16TH CENTURY ing food for invalids.¹

¹ Garrison says (p. 170) that various ordinances were made in Regensburg, Frankfurt am Main, and Passau, between 1555 and 1595, governing the practice of midwifery. The Elector of Brandenburg made investigations in 1516 that eventually led to the appointment of physicians and midwives as expert witnesses to examine and testify in cases of infanticide and abortion. Haggard says that there were no men midwives before the seventeenth century, but the story goes that a certain medical man named Werdt of Hamburg was so determined to practice obstetrics that he dressed as a woman, ingratiated himself with a few women who were pregnant, and in the guise of a woman delivered several of them before his trick was discovered. The city authorities arrested him, and after a short trial he was burned to death. There were, however, a few men midwives in France in the sixteenth century. Haggard, Howard W., "Devils, Drugs and Doctors", 1929, p. 29.

The most famous medical woman in Switzerland during the sixteenth century was undoubtedly Marie Colinet of Bern, who married Fabricius of Hilden, a renowned surgeon.¹ Fabricius himself said that, though he taught his wife surgery, she far excelled him. They lived in Geneva between 1585 and 1587, where Marie was born and where she had worked as a midwife. Fabricius particularly praised her skill as a bone-setter. He tells of one case, of a man who had such a severe injury to his ribs, that it was necessary for Marie to wire them to keep them in place. After this she placed over the wound a dressing of oil of roses, and a plaster of barley flour, powdered roses, and wild pomegranate flowers, mixed with cypress nuts and raw eggs; bandaged the patient with splints; and regulated his diet. He was well in four weeks. In her obstetric operations she used hot bags for dilating and stimulating



ANOTHER 16TH CENTURY OBSTETRIC CHAIR:
THIS WAS USED IN BED

the uterus, thus accomplishing a birth which might otherwise have required a Caesarian section, in which operation she was, however, especially successful. Fabricius also says that it was she who first used a magnet for extracting a bit of steel from the

eye; though medical historians generally overlook his statement, and hold that this was *his* invention. In any event, the citizens of Bern conferred on her the rights of citizenship; to Fabricius the city of Düsseldorf erected a statue. We shall refer to his work briefly later.²

There was a great botanist in Switzerland in the early quarter of the sixteenth century named Otho Brunfels (1464-1534), city physician at Bern, who published a "Herbarium" in 1530, which was famous for its excellent and original illustrations. Félix Plater in his "*Memoires*" (p. 89) remarks that the wife of Brunfels was also skilled in medicine,

¹ Guilh. Fabricii Hildani: "*Opera*," Frankfurt, 1646, p. 475. Also Harless, p. 165.

² Baas (p. 416) says of Fabricius Hildanus, "*Seine Frau aber war eine geschickte Hebamme, die unter Umständen auch wacker Chirurgisch prakticirte. Seine Kinder verlor er durch die Pest.*"

and so able that, after the death of her husband, she carried on his work and had a large practice of her own.

In Holland there was a famous medical woman named Catherine Tissheim, mother and teacher of the philologist, Gruter, the author of the compilation of Greek inscriptions. She read Hippocrates and Galen in the original, and is said to have studied medicine "profoundly." Although born in Amsterdam in 1560, she and her son lived for many years in Germany for the sake of the religious freedom to be had there. Peter Bayle, Brockhaus and others refer to her learning with admiration.¹

It is more difficult to find the names of the successful midwives who were plying their trade in Italy in the sixteenth century. Doubtless there were scores of them, quietly giving help and cheer to their patients; but, whether lay or clerical, they knew little or nothing of the techniques necessary in difficult deliveries. As a result there was an enormous maternal and infant mortality. Castiglione's beloved wife, Ippolita, died of fever when her baby was five days old. Her last letters to her husband from her death-bed are most touching, for she tells him bravely that she is "tired and has a little fever," but she expects to live to see him again, and to watch her new baby grow. It must have been small consolation to her husband that her physician wrote a "tender elegy on her character." Madeleine de la Tour D'Auvergne, wife of the great Lorenzo De' Medici, died in child-birth. The deaths in child-birth of Lucrezia Borgia and Beatrice D'Este have been already mentioned.

VII. SOME 16TH CENTURY MEDICAL BOOKS

THE medical books of the sixteenth century give us an insight into the conditions of life at the time: but they are also, unfortunately, a "heart-wringing condemnation" of the work of its midwives, surgeons, and doctors. Röslin's "Rose Garden," first published in 1513, was written at the request of the duchess Katherine von Braunschweig. She had the satisfaction of living to see it translated into many other languages, and illustrated better than any of its predecessors. The woodcuts show the position of the *foetus in utero*. There are pictures of lying-in rooms, in which the midwife holds the new baby while a nurse leads a little child towards its mother, strewing roses on the floor,

¹ Harless, p. 172. Cf. also Polycarp Schacher, "*De Feminis ex arte medica claris*," 1738; Peter Bayle, "Dict. of Biog.," Brockhaus' "*Lexicon*"; Tiracquellus, "*De nobilitate*"; Witkowski, "*Sages-femmes et accoucheurs célèbres*"; Siebold, "*Hist. de l'obstetric*."

probably in allusion to the title, "Roses for Pregnant Women and Midwives."¹

The work of Cajus Tranquillus Suetonius (d. A. D. 160), first printed in Venice in 1510, has actually better illustrations, and more correct anatomical details, than the copy of Röslin or his followers.² Röslin's or those of Suetonius is noteworthy for showing the first picture of a Caesarian section. The dead patient lies upon a long box, with her legs overhanging its edge. A surgeon holds up his great dripping carving knife, while an assistant removes the baby from the mother's abdomen. Three other women are watching the operation, while the husband wrings his hands; another man holds the patient's head, and still another, in the short gown of the school of Saint Côme, appears to be disturbed at the sight. The visiting women wear long robes, and have kerchiefs on their heads.

A running synopsis of another midwifery manual of the day, that by Thomas Raynald, gives a general impression of all of them. Its dedication reads: "The Byrthe of Mankynde, otherwise named the Woman's Booke. Newly set forth, corrected and augmented, whose contents ye may rede in the table of the books and most plainly in the prologue." There are first chapters on anatomy, beginning with the "coats in which the body is lapped or involved—" and considering in turn the muscles, peritoneum, uterus, seed vessels called stones, seed-bringers which carry the seed to the angles of the uterus, the bladder, etc. Also a discussion of menstruation. In the second part are reprinted the old methods for calculating the date of birth of a baby, a statement of the non-viability of an eight-month child, a discussion of the conduct of the confinement of girls of from twelve to fifteen years when "the passage be over narrow, straight or diseased," and one on "births in old women who are of feeble complexion, or too cold, or too fat or too lean," or in cases where "she never had a chylde before," etc. Then comes a chapter on the infant, whether it is too large or too weak to turn itself during birth, or if it present a knee or a shoulder or a foot, or if there are twins. There is a short paragraph on abortions during the fourth or fifth month, when the womb is usually so "tightly closed as not to admit the point of a needle." There is a chapter on the remedies which make labor easy, such as meat and hot sweet drinks if the woman is faint;

¹ Röslin was city-physician in Frankfort, 1506-1512. Some of his illustrations are taken from Soranus, thirteen hundred years before.

² Aveling, James Hobson, "English Midwives, Their History and Prospects," 1872.

hot duck's grease applied to the perineum; olive oil and linseed oil to the navel; warm baths containing mercury, maiden-hair, chamomile, and mallows; a sponge soaked with warm oil in the vagina; sweet odors to the nose, etc., all of which we have seen in the older books. The nurse should say hopeful words to the patient, stroke her abdomen, let her "grovel" on the floor, if she is fat, while the midwife anoints "her parts." There are several pages on the afterbirth. The third book is concerned with the care of the new baby, its diseases and their remedies. The fourth book is on conception, its let or hindrance, with remedies for sterility. Finally there follows a chapter on cosmetics, sweet breath, pimples, and feminine toilet requisites such as are found in all the oldest books.

Raynold speaks of the heart as a well of the arteries, "able to steer itself, close itself, and open itself, thus sucking in fresh air to temper the heat of the body, and making the pulses beat, and expelling misty fumes and hot breaths." This theory was neither new, nor did he take any pains to verify his statements. He calls the brain the seat of the witty spirits and sensibility, which are sent by the sinews to all parts of the body that move or feel. He urges women to study his book well, for he has taken great pains to write it; and he adds that it would not harm even children to read it, for there is nothing in women's anatomy so private that she should be ashamed of it. Nevertheless, he advises his readers not to discuss the book with lewd people, but only with their husbands or physicians. On the other hand, he advises those midwives who can read to read it aloud to those who can not read, for there are "bad midwives like asses, apes, bears, owls, etc., who will talk against the book and call it filthy reading, but it is only written for gentle folk who can appreciate it." Taken all in all, a book like this obviously does little harm if not much good. It shows no progress in diagnosis or skill, no hint at surgery or cleanliness, and foreshadows the nineteenth century in no way.

We have already mentioned Röslin's book. In its first edition (Strasburg, 1512) it was entitled "*Der Schwangern frauen und Hebammen Rosengarten*." The edition published in Worms in 1513 is called merely "*Der Rosengarten*." In a German edition of Röslin's book, printed in 1532 and dedicated to the Emperor Maximilian, there is a picture of a confinement in the time of Antoninus Pius, and another birth scene in which a woman brandishes a pair of scissors as large as pruning shears for cutting the baby's cord.

An edition in Latin of Röslin's book, "*De Partu Hominis et circa ipsum accidunt, libellus E. Rhodionis*," was published in 1532. In Rhodion's edition are many interesting illustrations. On the title page is a mother sitting up in bed watching the nurse and baby. On the floor is a wooden tub beside the empty obstetric chair, and above it hangs a little lamp. There are the usual pictures of preternaturally active infants in gymnastic positions in their circumambient fluid inside the uterus. In one edition of Rhodion's translation are the following lines condemning the ignorance of ordinary midwives:¹

Ich meyn die Hebammen alle sampt
Die also gar keyn wyssen handt,
Darzu durch yr hynlessigkeit
Kynd verderben weit und breit.
Und handt so schlechten Fleiss gethon
Das sie mit Ampt eyn Mort begon.

It was also translated into Spanish, and ran through twenty-eight editions. The Spaniards popularized a flat mannikin in many layers, one of which by Carbo of Mallorca was condemned by the Inquisition in 1541, although the author was unmolested, and eventually only the lines on impregnation were omitted.

In another edition of Röslin, one of only seventy-four pages, are two medallions, each containing the portrait and name of a nurse or medical woman, one of them Maria Patidilla Antonini Pii, the other Anita Paulina. In still another edition (1583) by Adam Lonicerus, "*doctor der Artzney daselbst*," the babies in the uterus are quite new and original, one seems to be weeping and rubbing its eyes, another hugs its thick cord, another presents by the buttocks as if sitting on a stool, "in which case," says the author, "it would be easy to turn the foetus so as to make its egress more rapid." The mothers are represented in modish gowns and large capes. As for Caesarian sections, Lonicerus advises that the incision be on the left side to avoid cutting the liver, the mouth of the dead mother being held open "so that the child may continue to breathe during the operation." If the child is dead it may be removed through the vagina, piecemeal, by hooks.

We have already mentioned that Trotula's great work on gynecology was printed for the first time during this century. Caspar Wolff of Zurich published it in 1566; Caspar Bauhin of Basle in 1586. Most comprehensive, however, was, as stated, the edition of Spach. This

¹ Quoted by Dr. Howard A. Kelly, *Johns Hopkins Hospital Bull.*, No. 9, 1890.

contained, according to its publisher, "the illustrated works of all the best writers on the subject of diseases of women, in Greek, Latin and Arabic." Of Felix Plater there are tables and case records; Moschion and Cleopatra are printed in Greek in parallel columns for comparison of "lamnion": "*Fozzini*... *sive potius Erotis medicæ liberti Juliane liber LX*" fills almost twenty pages; Nicholas Roch has a running commentary on such old writers as Olympias the Theban, Paul of Aegina, Galen, Dioscorides, Aetius, Soranus, and there are also the treatises of Fuchs and Rhodion, who were contemporaries of Spach. He includes also the work of Bonaciolo dedicated to Lucretia D'Este, the work of Sylvius, written in the middle of the century, and the works of Ambroise Paré and Guillemeau the surgeons, all well illustrated with pictures of the instruments used in performing operations—altogether the gynecological work of twenty-one authors, collected in one great volume of 1080 pages in fine black print, besides a preface and index. No wonder that it ends with the pious reflection, "*Laus Deo.*"

Enough has been given here to show that gynecology was becoming a medical specialty; and that books on the subject were coming to be necessary. There were also "fugitive sheets"; and manikins, in superimposed layers, to be used in barber shops and clinics, were popular. One, called *Ere*, in six layers, was published in 1540 by Perutilis of Paris and hung in bath-houses and pharmacies. One called *Adam* has the face of Vesalius. In 1564 a wood-engraver named Hans Weygel of Nuremberg published such a figure with twelve flaps, showing a nude woman on an obstetric bed. A nurse holds a towel so as to hide the vulva, but on raising the first flap we see the interior of the abdomen and a pregnant uterus, beneath the flaps of which in turn is a well-developed foetus.

Another important scientific book of the sixteenth century was the "*Margarita Philosophica*" of Gregorius Reisch, printed first in the latter part of the fifteenth century, again at Basel in 1503, and later. Reisch was a monk of the Carthusian monastery in Freiburg, the confessor of Maximilian I, assistant to Erasmus. His "*Margarita*" was a sort of text book for all students of the Seven Liberal Arts, "fully illustrated by drawings of great interest taken from ancient sources." There is a valuable map of the world hinting of great unknown islands to the west, not part of Asia. Of particular interest to us, however, are his several woodcuts of human anatomy, showing dissected bodies and also special organs, such as the eye, the neck, trachea, etc. His signs of the zodiac are the conventional ones; and his pictures on blood-letting may have

come even from Chinese sources. Sudhoff has traced many of these illustrations of Reisch. He finds some in a sixteenth century edition of Ketham. Since medical illustrations were reprinted century after century, it is a pity that the much better anatomical drawings of Leonardo da Vinci¹ such, for instance, as his child in utero, were lost for two hundred years; they would have been a greater help to midwives in their work than those of the "*Rosengarten*".

There were also in this century two new and popular books on pediatrics written for mothers and women doctors. Both were in verse so as to be easily memorized. One of them, by the godly abbot Quillet, was dedicated to Calliope. Its title may be translated "Radiant Motherhood", it being a panegyric on beauty both in the child and the mother. The Abbot says that all men were handsome and all women fair before the Fall, but now sin has drawn its lines in the human features.

The other book was by Scevola de Sainte Marthe, physician to seven French kings. He called it "*Paedotrophiae*", or the "Art of Nursing and Rearing Children". It was published in 1584, and dedicated to Henry III of France, "the patron and pattern of polite learning." It was written in advocacy of good marriages, and particularly of breast feeding for infants. Mothers, he says, should—

"...learn how to nurse the pledges of our love"...

And addressing the doctors, he pleads—

"You who are vers't in Esculapian arts
To whom the God his healing power imparts."
..... a mother must
Large meals upon the sucking babe bestow,
And freely let the snowy fountains flow.

He advises pregnant women to avoid the nostrums of quacks, and to be careful in their diet, eschewing particularly uncooked chicken and gravel. They should not wait too long in the early stage of labor before calling the midwife. He tells the nurse how to prepare the obstetric chair and bed, how to anoint the patient's perineum with oil, how to mix the mastic and myrrh for the child's navel, and when to feed it with honey and wine before putting it to the breast. Its eyes are to be washed with mother's milk, lemon juice is to be rubbed into the tonsils, oil to be dropped into its ears. If its gums become sore in teething, the baby's

¹ *Isis*, 1931, p. 342. Review of an article on "Leonardo da Vinci, the Anatomist," by J. Playfair McMurrick. The anatomical drawings of da Vinci were discovered at Windsor Castle in 1784 by the famous obstetrician and anatomist, William Hunter.

fingers are to be dipped into a mixture of hare's brains, honey, and rose water, so that when he sucks his fingers the mixture will soothe the inflammation. For diarrhoea the nurse should give the child a tea of poppy seeds, and camomile for its colics, and marshmallow root for a physic. These directions are all written in the form of a poem, which ends with a diatribe against war.

Although there had been little improvement in obstetrics in several hundreds of years, yet signs will be noted that, at least, in the sixteenth century midwives had grasped the idea that sometimes surgery was required, and that this surgery might be performed by a man with the necessary skill and daring if no woman was available. In other words there was a growing sentiment in favor of consultations with a man surgeon in extreme cases. The first picture that we have of a man in the lying-in room is said to be found in Coccles, "*De Sorte Hominum*" (Venice, 1522). But before that there were traditions of farmers and shepherds who had performed Caesarian section on their wives who survived them to have other children. The earliest of these stories is told of a certain sow-gelder in 1500; but it may be apocryphal.¹ By 1580, however, it was deemed desirable to prohibit farmers and shepherds by law, in Germany, from officiating in labor cases. Also army surgeons were not considered sufficiently skillful to operate on women. George Baker said that they slew more than the enemy did, which did not add to their popularity in England. Ship surgeons, for some reason, had a somewhat better reputation than those of the army. It is said that they peered into abdominal wounds by the light of a candle; and that, if necessary, they stopped internal hemorrhages with their longest cauteries. They had needles with large eyes, blunt dissectors and probes, trepans, many kinds of knives, forceps for extracting arrows, and strong saws with which they could amputate a limb in a very few minutes. Anesthesia was, of course, still unknown; but they gave their patients as much wine and opiate as was necessary to put them out of pain during the operation.

VIII. MEDICAL MEN OF THE 16TH CENTURY

IT would not be fair to try to tell the story of the medical women of the sixteenth century without giving more than passing references to the great medical men of the period, especially as many of them fully

¹ Garrison, op. cit., p. 160.

appreciated women's capabilities, and some of them, like Paré, made special effort to teach them. We may blame the universities for their ban against women, making difficult for them the acquirement of the cultural foundations of a medical career; we may blame the religious spirit of the time, with its tendency to keep women in an inferior social position; but we should also blame the women of the day themselves for their lack of organization and of interest in promoting their own advancement in law, medicine, art, and business. We must admit that, for some or all of these reasons, women were gradually slipping into a sort of intellectual inertia while men were forging ahead. And that there were exceptions to this conclusion, by no means challenges its general validity.

It was in this century that such scientists as Copernicus, Vesalius (1514-1564), and Paracelsus (1493-1541) lived and worked. There was still much medievalism in the beliefs of these men; but they were endeavoring to do, and did, considerable independent thinking. In the domain of medicine all thinkers were struggling to get rid of the incubus of Galen. Berengario da Carpi (d. 1550), the anatomist of gynecologist, dissected more than a hundred subjects carefully. Sylvius (Jacques Dubois) (1478-1555) "injected veins" in order to differentiate the arterial and nervous systems. Leonardo da Vinci was painting muscles that he actually saw. Eustachius (1520-1574) and Fallopius (1523-1562) and Vesalius all made important discoveries in anatomy, to some of which their names are still attached. But, with the exception of Paracelsus, not one of these masters dared say out loud that they disagreed with Galen.

And there was still the Church to be reckoned with. Because of his belief in the essential unity of the godhead, in the Copernican theory of the multiplicity of the worlds in the universe, and in the indestructibility of matter, Giordano Bruno (1545-1600) was burned at the stake. Writers like Eustachius were not allowed to publish really valuable material. Others, like Coiter, earned money by the publication of such puerile questions and answers as: "Why is man the only laughing animal? Why do babies have blonde hair? Why are strong people more likely to be seasick than frail people?" Gianbatista Porta (1536-1615) easily found a publisher for his strange "doctrine of signatures", which was based on a theory that "like cures like", the "likeness" being perhaps merely one of color, shape, or size. In other words he would give yellow remedies for jaundice, lung-wort for cough, etc. But this theory was

of a kind with Frascator's "seeds of disease", which were supposed to originate in the stars; and with the belief that a baby's horoscope was almost as important as life itself. The barber surgeons, physicians, or master surgeons were not treated materially better in one country than in another. In 1540 King Henry VIII permitted the surgeons to form a Guild; and his personal surgeon, Sir Thomas Vicary, was its first Master. A painting showing the King and all the surgeons of this organization kneeling before him is one of Holbein the Younger's (1497-1583) most interesting works. One of their rules was: "No carpenter, smith, weaver, or *woman* shall practice surgery." This may show that women were not welcome as surgeons; but it also shows, indirectly, that women were even then regularly doing surgical work, for prohibitions are not imposed unless there is something to prohibit. The barber surgeons outnumbered the master surgeons 185 to 17. The surgeons did not secede from the barbers until 1745, and it was not until 1800 that they formed the Royal College of Surgeons. The physicians had formed a Royal College under Linacre in 1518¹; an action which had a great influence on medical education.

After forming their Guild the surgeons were allowed the bodies of four criminals each year for their studies in anatomy. They met each Saturday for an hour, and listened to a paper written by one of their number. They also had the royal privilege of selling brandy, from which they received quite an income. But no member was allowed to perform any operations without the consent of the entire Guild, nor were they to give any medicine without the consent of the College of Physicians. Ten years later, in 1551, a surgeon was appointed from the Guild as surgeon to St. Thomas' Hospital. During the following centuries many women were appointed as "dressers" and attendants; but it was more than three hundred years before women were allowed to become members of either the Guild or the College of Surgeons.

The same Sir Thomas Vicary (1490-1561), mentioned above as the first Master of the Guild of Surgeons, was the author of "The True Anatomy of Man," (*"The Englishman's Treasure,"* 1548), the first work on anatomy printed in English. Osler² says that he copied his material from De Mondeville and Lanfranc.

Another of the King's physicians was Sir Thomas Elyot, whose "Castel of Helthe" was published in 1534, and several times reprinted.

¹ Wheatley, Henry B., "The Story of London," pp. 178, 179, 1909.

² Osler, William, "*Bibliotheca Secunda*," No. 4168.



A WOMAN SURGEON TREATS A LEG WOUND.

*The nude patient is in bed. A man acts as assistant. Two others watch.
(From a 16th century wood cut.)*

"This book," says its author, "was gathered out of the chiefe authors of physyke, whereby every manne may knowe the state of his owne body, the preservation of helth, and how to instruct his physition in sykenes that he be not deceyved." As Elyot was not a graduated physician, and as the book was written in English to teach the common people how to diagnose their own diseases, the profession were quite annoyed at the welcome reception given it. It is a small volume, only 6 x 4 inches. The author quotes extensively from Galen, prescribes rules for diet, advises the drinking of rain water instead of wine; but, he adds, the water must be light, and have little scum on boiling. As for milk for babies, that of the mother, he says, is best. Then comes that of a cow, then goat's milk, then camel's; but he advises boiling all milk with sugar, or honey, or mint. He also advises copious bleeding, leeches, cupping, etc. His diagnosis of disease by the urine is shown in a page of color tests. "For the prevention of the plague," says he, "one should eat, after fasting, figs cooked with rue, walnuts, treacle or mithridate dissolved in vinegar or rosewater, but abstain from meat for six hours afterwards," and he adds, "let him flee from the place corrupted betimes and far off, and let no one come near from the abode of the plague." He closes with a pious prayer for both physician and patient, and begs for kindly reception for his book.

Another of the great medical men of England at this time was John Caius (1510-1573), the founder of one of the colleges at Cambridge and a noted Greek and Latin scholar. He lived through one of the epidemics of the sweating sickness, and took the pains to study his patients and make notes on the symptoms of the disease; but the causes of epidemics in general puzzled him and he wondered if God did not protect some people more than others. He wrote seventy-two books and pamphlets; taught for three years at Padua, where he had studied; travelled widely in search of medical material; and never flinched from defending himself because he was a Catholic in Protestant countries. His simple epitaph reads: "*Fui Caius. Vivit post funera virtus.*"¹

Another of the famous physicians of England in this century was Thomas Linacre, a native of Canterbury (1460-1524). He was priest,

¹ A recent book by Harrison, "An Elizabethan Journal, 1591-1594," p. 426, states that Dr. Caius was "well money'd and his friends were Potent at Court." He was court physician to Edward VI, Queen Mary, and, for a short time, to Elizabeth. He also lived in the palace of Cosimo de' Medicis at Florence for some time. Henry VIII appointed him lecturer on anatomy in London; and he was elected president of the College of Surgeons nine times.

doctor, and grammarian, most happy when translating some abstruse passage of Galen. He also had studied and taught medicine in Padua, had "crammed Dioscorides, Aristotle and Pliny," and had made a small fortune by his skill at the court of Lorenzo the Magnificent. He returned to England to care for the courts of Henry VII and Henry VIII. Linacre was not only the friend, medical adviser, and teacher of royal courtiers; he was also a botanist. Dr. Caius also was fond of Linacre and called him his "*fidus amicus*", and Cardinal Wolsey was another friend. We can but regret that Linacre did not put his talents into the furthering of the science of medicine rather than on declensions in grammar.

One man in this century was destined to revolutionize obstetrics, William Chamberlen¹, who had fled to Southampton from France at the time of the massacre of the Huguenots. He was probably the first man in England to use the short obstetric forceps. They were kept secret in his family for generations. Hugh Chamberlen, his grandson, tells us that so-called men-midwives of his day (1670) were obliged to work with their heads under a sheet in order not to be seen by their patients.

While the English medical men of the sixteenth century were churchmen or scholars, representing every variety of medical belief but contributing very little new, there appeared in France a great surgeon, a man of originality and invention, one who cared little for Galen or de Chauviac, who wrote several books in simple language that all Frenchmen could understand, and whose methods of stopping hemorrhage and cleansing wounds were to be used by all surgeons for three hundred years. This man was Ambroise Paré (1510-1590), born in Laval, Brittany, the son of a cabinet maker who was perhaps also a barber-surgeon. As a boy he once had the good fortune to "assist" a wandering surgeon named Colot as he performed an operation, and this chance encounter started Paré's ambition to study surgery himself. In 1541 he became a master barber-surgeon; but his knowledge of Latin was so poor that it was with difficulty that he gained admission to the Order of St. Côme, and was allowed to wear the "long gown."

From such humble beginnings Ambroise Paré rose to be the surgeon to six kings. When he studied at the University of Paris, the medical faculty, as they had been doing since 1491, were lecturing to the students

¹ Aveling, "The Chamberlens and the Midwifery Forceps," pp. 215, 226.

at 4 o'clock in the morning on the surgery of Guy de Chauliac, in French, at noon to the pharmacy students in French, and at 2 P. M. to the medical students on Galen, in Latin. When he began his professional career the barbers were divided into two classes, those who cut for stone, trepanned, reduced hernias, operated on fistulas and hemorrhoids, and others who bled, and cupped, and dressed wounds. The regular "surgeons" were obliged to sit "with folded arms", and watch, criticize, and often condemn some of the barber's operations; while the doctors interfered with both surgeons and barbers as much as possible, and completely prevented their giving any medicines. When Paré first came to Paris there were only two carriages in the city, both used by royalty. Doctors and surgeons walked or rode horseback, and their fees were paid in wine or horses, or "other honorable presents".

It is said that Paré has been the subject of more books and monographs than any man of his time, and deservedly so; but, though he was an excellent surgeon and one of the earliest of "men-midwives", he still had a most naïve belief in monsters, maternal impressions, charms, and magic. Whether he was a Protestant or a Catholic during all those years of religious warfare has been difficult to determine. He was evidently a good Christian, never taking to himself the credit for curing his patients. "I treated him, God cured him," was his usual refrain at the end of his recital of a case history. He was sadly worried when he performed his first surgery without the use of the customary boiling oil to stop hemorrhage; but later he always tied the bleeding vessels, and treated wounds as gently as possible. He performed Caesarian sections for dystocia of the pelvis, saving both mother and child; extirpated prolapsed uteri which could not be held in place by egg-shaped or round pessaries made of waxed linen; and attended to the patient's diet and nursing comforts. Paré often praised the treatment prescribed by the women care-takers and nursing sisters at the hospitals; frequently used the prescriptions of the women doctors; and helped them in their work, as he not only helped but taught midwifery to Louise Bourgeois and probably to other women. He often said that patients whom the men doctors failed to cure were brought back to health by "some old woman".

Paré's first book on anatomy in French was printed in 1550, and became at once popular. His text book, on gun-shot wounds, 1545, was presented to Diana of Poitiers in 1552. His ten books on surgery were published in 1564, and his book on the plague came out in 1568. His collected works were printed in Latin in 1575, and after that came a

book on the use of mummy and unicorn in medicine (1582), and reprints of his other works in French and in Latin.¹ He died in 1590.

Among the physicians in France during Paré's lifetime, one was remarkable; Jean Fernel, or Fernelius (1497-1558) of Brittany, a mathematician at heart, but a good psychologist and a hard worker, who, having studied medicine, found himself forced to support his family by practicing it. He became so popular that he often was obliged to see patients from 4 A. M. to midnight. He believed in treatment by contraries rather than by similars; diagnosed all diseases by the urine and pulse; wrote books at odd moments on hygiene, fevers, anatomy and physiology, venereal diseases, epidemics (especially on whooping cough, which was endemic for thirty years); and, finally, compiled a dictionary. He died in 1558. His motto was "Destiny reserves for us sufficient repose."

Among the teachers of Paré and Vesalius was the anatomist, Sylvius, or Jacques Dubois (1478-1555) as he was named by his parents. He was such a bigoted believer in Galen that he hated Vesalius, his pupil; and called him mad for daring to deny the correctness of every word supposed to have been written by the great master. When confronted with undoubted errors in Galen, he retorted that "man's anatomy might have changed, but certainly not for the better." Several names of veins and muscles were suggested by Sylvius, besides the "aqueduct" named for, and immortalizing, himself.

One of the best known medical men of France earlier in the century was Rabelais (1490-1553), a native of Chinon, near Tours. He was educated for monastic life; but, when no longer a young man, decided to go to Montpellier to study medicine. There he translated Galen and Hippocrates, and became convinced of the "damnable errors" of the anatomists who dared to oppose Galen. But he was equally disgusted with quackery and magic. He evidently approved of women studying medicine and practicing it, for in his "*Gargantua*" he says: "Women

¹ A dozen books containing lives of Paré are mentioned in the volume by Stephen Paget; and scarcely a history of his times lacks an account of him. Dorothy Singer (1922) and F. R. Packard of that year have given us extracts from Paré's writings and accounts of his life. Malgaigne issued the first complete modern edition of his works; but to the historian the editions prepared by Paré himself, with their old illustrations and quaint wording, are more interesting. It is strange that a man who could denounce mummy and unicorn remedies, should yet believe in the human monsters and fabled beasts which he describes. He believed that a glance of the eye could cause the plague, and that a clove in the mouth, two open sores on the body, and a sachet over the heart would protect the wearer from a contagious disease.

and young girls have aspired to this praise and celestial manner of good learning, but, before taking up the study of medicine, they should study Latin, Greek, and Hebrew, the natural sciences and anatomy." He practiced medicine in Lyons at a time when a decided house-cleaning of the city was going on. Cesspools were closed, gutters flushed, rats killed, and rubbish burned.

In Germany at about this time was another friend of medical women, not a medical man himself but a lawyer, Andreas Tiraquellus of Strassburg. He wrote a large volume in praise of women, "*De Nobilitate*", in which he mentions among others, all the medical women of antiquity down almost to his own time. He died in 1558 at the age of eighty, before the work was finished, and it was published by his son. Incidentally, it may be mentioned that Tiraquellus, by two marriages, left forty-five children.

One great German scholar of this period became so renowned in a quite different field that we forget he was a humble country doctor. Copernicus, born in Thorn, Prussia, in 1473 (where he died in 1543), studied the liberal arts in Cracow, law in Bologna, and medicine in Padua. He lectured on astronomy in Rome; but later became a practitioner of medicine in Frauenburg, Prussia. During his lifetime he was as noted for his medical cures as for his astronomical discoveries. His portraits usually show him with a convallaria (lily of the valley) flower in his hand, for that plant gave him a good remedy for heart failure. One of his favorite prescriptions contained twenty-one different ingredients, many of them rare exotics cultivated in his own garden. He regarded camomile, sandal wood, corals, emeralds, sapphires, amber, gold, and silver as indispensable in medicine.

Theophrastus Bombast von Hohenheim or, as he preferred to call himself, Theophrastus Paracellus (1493-1541), was a man of quite different type. He was the son of a physician, and his mother had been the superintendent of the hospital at Einsiedeln, Switzerland, where he was born. Evidently she had herself studied medicine, for her position was that of a medical man, i. e., *Vorsteherin des Krankenhauses der Abtei*. The boy, however, seems to have been more attracted to his father than to her, although he says that she taught him until he entered the University of Basel. Here he got into trouble with the authorities, and was dismissed without a degree. He lectured there later, however; and it was there that he burned the works of Galen in a fit of jealous rage, condemning the old master to "burn in Gehenna." Instead of believing

the Galenical theory of the humors, he invented a theory of his own, that the body is made of three essential elements, salt, sulphur, and mercury, dependent upon an astral body centering in the stomach. Paracelsus also invented certain remedial substances which he called "abstractors of quintessences". This made Rabelais laugh scornfully; but they both were agreed as to "morbific seeds of disease", each kind producing its own kind, and also in the use of mercury in treating syphilis.¹ Though Paracelsus rejected the ancient medical beliefs of Galen and the Arabs, he still adhered to a doctrine of signatures and to alchemy. Clad like a mountebank in a long red gown, and wearing an embroidered coat and a plumed hat, he traveled from town to town, haranguing multitudes in the market places, philosophizing with his convivial companions, and occasionally treating a patient. However ill founded his theories, he was never dull or pedantic. Although he never praised his medical mother, he admitted that he had learned many of his best prescriptions from women (*Weibern*), especially a "*Wundertrank bei einer edlen Frau*" in Sweden. His ideals for physicians were high: "no larval man, no old woman, no liar, no superficial experimenter, but a strong, upright man" could answer his requirements. He also adds that the only rule of conduct for a doctor must be love for mankind.

Turning to Italy, Girolamo Fracastero (1484-1553), and his long poem on syphilis, "*Syphilis sive Morbus Gallicus*", have already been mentioned. He treats the disease with large doses of mercury and guaiacum; but although interesting, the poem is too long, even for excerpts here. He also wrote learnedly on diets, and in 1546 he published a work on contagion. To him diseases were not sent from God as a punishment for sin, nor were they due to a putrescent condition, nor were they merely something ephemeral; they were caused, he believed, by "*seminaria*." He differentiated typhus and typhoid fevers from malaria; and even went so far as to suggest that rats and fleas carried the seeds of the plague. He also thought that catarrhal fever (now called influenza) was brought by boats to Italy, and was spread by vermin. In every country, evidently, thinkers were now using their brains to solve the riddle of contagious disease; without microscopes they could not see what they were imagining to exist.

Another Italian writer on medicine during this period has a name which is in almost daily use among gynecologists. This was the anatomist Gabriel Fallopius (1523-1562). He was a native of Modena,

¹ Kahlbaum, George W. A., "*Theophrastus Paracelsus*," 1894.

studying medicine, like so many others, at Padua. He was without doubt a great anatomist, discovering many new veins, glands, and lymphatics, and naming various aqueducts and tubes for himself. He taught anatomy in Ferrara for more than a score of years.

To medical women as well as to men, the most interesting anatomist of the sixteenth century was Andreas Vesalius. He was born in Brussels, then a Spanish possession, in 1514; studied medicine in Paris and Montpellier with Sylvius and others; and then went to Italy as an army surgeon, hoping to beg, buy, or steal some bodies for dissection. In 1573 he took his medical degree in Basel, and the following year published the first of his anatomical plates, which were illustrated by Calcar, a pupil of Titian who was still alive. From 1537 to 1542 he was professor of anatomy at Padua, teaching large classes of students, and frequently showing them the errors in the anatomy taught by Galen. A man so audacious naturally made enemies; but, in 1542, he completed his great work, "*De Humani Corporis Fabrica*", which was published the following year. Ten years later, so great was the opposition to the publishing of any more adverse comments on Galen that Vesalius burned his more recent notes, and accepted the invitation of the Emperor, Charles V, to go with him to the Netherlands and Spain as royal physician. For a while he gave up his anatomical studies entirely. Some years later, having an opportunity to make an autopsy, he found to his horror that the heart of the supposed corpse was actually beating, although almost immediately it stopped. Vesalius realized that he would be accused of murder. The king saved his life, but sent him on a mission of penance to Jerusalem. On his return he was shipwrecked on the Greek island of Zante, and died, 1565.

Vesalius was the first who dared assert that the human uterus has only one cavity, not two nor seven; but he still thought that the heart was only a reservoir between the arteries and the veins. The latter, he thought, originated in the liver; and the lungs needed only to be nourished in order to function. He was generous to the women students at his university; and was so remarkable as a surgeon that to him, and to Berengario da Carpi, the gynecologist, they turned for help in difficult surgical and obstetric cases. Vesalius was a great anatomist as well as a great scholar, reading Greek, Hebrew, Latin and Arabic. In his lectures and dissections both at Padua and Bologna, he sometimes used three bodies at once to show anomalies, or similarities in them. He was fortunate in having Pope Pius IV as his friend, through whom he ob-

tained bodies for dissection, as well as opportunity to publish his great "*Fabrica*." Singer calls the work of Vesalius the first great scientific achievement in modern times.

Of the works of Felix Plater of Basel (1536-1614) there are eighteen volumes in the Library of the British Museum. He was born at Basel, and received his education there, taking his medical degree in 1557. He then studied at Montpellier for a year or two and returned to Basel where he was appointed to the deanship at the university in 1571. Plater kept a diary while a student at Montpellier, and in it we find that medical students then were not essentially different from those of today. He says that at his master's house, where he lived, there were no spoons for table use, the students eating their soup with turnip rinds or cabbage leaves, and cooking their eggs over the fire and eating them on buttered paper. They took the girls to walk and played pranks on them, often dousing them in a little brook over which there was a loose, plank bridge. For the study of anatomy the students stole bodies from newly dug graves, bearing them home cautiously to their bedrooms, where they hid them, and then worked surreptitiously on them by candle light. It is especially interesting to us to find that there were women students at Montpellier in those days, and at least one woman in Felix Plater's own class in 1557. She was the widow of Otto Brunfels, the botanist (1464-1534). She had studied medicine in Basel at the age of sixty-five, and had been appointed city-physician at Berne. She must have been considerably younger than Brunfels, for it was twenty years after his death that she studied in Montpellier. Plater says that she was a good student, and had an excellent reputation as a physician. He also says that there was a popular woman doctor in Montpellier, "an old woman", Madame Lülbürenen.

There are many other valuable historical details in the diaries of Felix Plater and his brother Thomas with their two folio volumes of over sixteen hundred pages. They bring vividly before us the dreadful epidemics of the plague, when panic reigned and the average death rate was four thousand persons a day. Doctors went around the streets clad in long white gowns, their faces hidden by a mask in which there were great goggle eyes and a nose like a snout. They record one woman student acting as impromptu midwife at an inn, where a visiting woman, a Spaniard, was taken with the pains of labor during dinner and was delivered of a son there in the dining room behind an improvised screen.

The diary also records the autopsy of a woman who died in childbirth, an autopsy at which several women students were present.¹

IX. 16TH CENTURY MATERIA MEDICA

IN the sixteenth century at last some new medicines—mercury for example—were being used more generally even though still more or less experimentally. On the other hand mummy powder, theriac, mandrake and animal excreta were still important. In Gerarde's "*Herball*" (1597) are illustrations of the mandrake and of many other plants used for the treatment of diseases; and in Paré's work on monsters are all the fabled birds and animals of the old Bestiaries—pelicans, sirens and basilisks, the phoenix, dragon, griffin, salamander, and unicorn. There was still the famous "*unguentum armatum*," or weapon salve (to be used on the weapon that caused an injury rather than on the patient), still the moss from the skull of a hanged thief, still all the useless remedies advocated apparently as strongly as ever by one or more of the great medical authorities of the period.

There was, however, some new work being done in botany, and of it the famous "Herbals", of this century, published as a sort of sequel to the "*Hortus Sanitatis*" of 1491, are a partial result. Among the compilers of "Herbals" were Leonard Fuchs (1501-1566), whose book, "*De Historia Stirpium*," 1542, contained more than 500 plates (see Garrison page 161), and from whose name we get our word "fuchsia"; Mattioli di Siena (1501-1577) and Dodoëns of the Netherlands (1517-1585), both physicians to royal families, who between them succeeded in adding three hundred new species of plants to those listed by Dioscorides; Mathias de l'Obel (1538-1616), from whom comes our word "lobelia", physician to William of Orange and forerunner of Linnaeus in his classification of plants; Cesalpinus (1524-1603) who at Pisa created the first botanic garden and there classified 1520 plants; and Conrad Gesner (1516-1565) whose already mentioned encyclopaedia of plants and animals was printed in 1551-1558, and translated into English by Baker in 1599.

These Herbals, together with Hippocrates, Galen, Pliny, Plato,

¹ For further references to the medical and surgical authors of the sixteenth century see articles by Fielding H. Garrison on the Historical Collection of Medical Classics in the Library of the Surgeon General's office. *American Medical Assn. Jour.*, vol. 56, p. 1785. See also histories of medicine by Baas, Heiser, and many other writers.

Avicenna, and Rhazes, were the text-books studied by Vesalius, Paré, and all the other men and women whom we have mentioned. Despite the new interest in botany, it had to be, like almost all really scholarly work, a labor of love. There was little money in collecting plants or dispensing herbs. Botanists like Garcia of Orta went as far as India and China in search of plants. Gesner, in Zurich, where he was professor of natural history, had his own garden of exotics. He distilled waters, oils, and resins in his experiments with drugs, and classified large numbers of plants, signing his published articles under a pseudonym, Luonymous Philiator. He is said to have read 250 authors in preparation of his work, and to have travelled all over Europe for his specimens. Among the remedies of which he specially boasted were: three drops of coral as a cure for epilepsy, three drops of pearls for fainting, three drops of oil of brimstone or turpentine for asthma, one drop of oil of cloves for toothache, three drops of oil of iron for dysentery, and the same quantity of oil of quartz for stone. Just what these last two oils were it is difficult to imagine; evidently essential oils found favor as medicines with the men and women doctors of the century.

Some of the more atrocious remedies of the day were rejected by such men as Ambroise Paré and Fernel. They could not bring themselves to use the disgusting offal pills, or mummy powder. Paré called this powder the "flesh of decomposed cadaverous bodies", and he says, "The ancient Jews, Egyptians, and Chaldeans never dreamed of embalming their dead to be eaten by Christians . . . it smells so bad that fishermen use it for bait." Nevertheless it was generally used for bruises and had a large sale, so large in fact that that it was often faked, the flesh of recently defunct human beings being used in its place. Unicorn's horn was another quack remedy actually made from the horns of the rhinoceros or the bones of some even more common animal; it sold for more than its weight in gold, being considered an antidote for all poisons. Paré tested it many times and found it absolutely worthless; but he did believe in the remedial power of the moon and stars, in the healing effect of the king's touch, in prayers to the saints and in holy relics, as well as in the spontaneous generation of maggots in wounds, and the ability of blue-bottle flies to carry contagion.

Fernel prescribed pleasant tasting medicines, the use of opiates and purgatives, cupping, sweating, diet and baths, poultices, and a plaster made of fuller's earth mixed with yolk of egg and salt. He believed that cancer could be cured only if it was wholly removed before its "seeds"

had spread into the system. If it was too late to cut out the cancer, he said that no medicine could touch these seeds, but that the poor patient needed anodynes, good food, and white wines to make his days and nights bearable. For purgatives Fernel used aloes, rhubarb, senna, manna, and black hellebore. For what we now call pituitary troubles he gave turpeth mineral and colocynth, with hot baths, ointments, and massage. For medicated baths he ordered rose leaves, violets, rosemary, and juniper berries boiled with mucilage of acacia, and flax seeds boiled with citron, and then added orris root and borax and plantain leaves. But there was no dried dung, no ground toad flesh, nor any of the ingredients used by the witches in Macbeth.^{1 2 3}

¹ *Consiliorum Joannis Fernelii*, Centuria, 1593, Chap. LXXIV, p. 183.

² Henry VIII compounded some of his own remedies, among them a special mixture made by boiling a red-haired puppy in ale, together with scorpions and a "great dishful of great ground worms." Queen Elizabeth had an apothecary bill of more than \$400 in one quarter, some of her preferred remedies being as old as the hills. Much controversy has been printed on the subject of the Queen and her many ailments; it is unfortunate that she kept no diary of her symptoms, and self-imposed treatments.

³ In G. B. Harrison's "Elizabethan Journal" (1929) pp. 99, 100, is to be found Dr. John Hester's remedy for plague: "Mummy powder (now made of dried flesh and balsams) used as a balm or tincture, and balsamum urinae, made from the urine of a twelve-year-old girl, or of children that have drunk wine, putrified in dung for one year, and then distilled." He notes, "The liquid residue is white and stinking, therefore you may give it both taste and smell with cinnamon and sugar. The last residue of the faeces...ye shall sublime... Some affirm that this will dissolve gold and silver and other metals."

On p. 371 is to be found another remedy for the plague: "Keep the premises clean, have charcoal fires burning in braziers in every room, not in the chimneys...chew the root of angelica, setwall, valerian, or cinnamon. Eat cinnamon toast, drink a decoction of rue, scabias, and wormwood steeped in ale," etc.

On p. 315 of Harrison we find a record dated April 16, 1594, telling of the death of the Earl of Derby, who had a "strange sickness, vomiting sour, rusty matter with blood, yellow jaundice, melting of his fat, swelling and hardness of his spleen, a vehement hiccough, and for four days before death a stopping of his water." The Earl had often "taken Beza's stone and Unicorn's horn... and many thought him bewitched." "An image of wax with hair coloured like his hair coiled around the belly" had been found in the sick man's room. This image would not burn because a "homely woman, fifty years old, was found mumbling prayers in a corner. She was seen in the act of blessing a pot of herbs"; but no doctor could save the Earl from the effect of the waxen image.

It might be explained that the "Beza's stone," or bezoar stone, referred to, is a concretion found in the alimentary canal of some ruminants and much prized as an antidote to disease or poison. These stones are often seen in museums, elaborately framed in gold and jewels. They were of immense value, and carried in the pocket or hung as an ornament on a gold chain and worn on the neck. Sometimes the stone is calcium phosphate.

X. THE 16TH CENTURY—CONCLUSION

IT is obvious that the sixteenth century was one of extreme and puzzling contradictions, because the whole Renaissance was a great transitional period of thought. It was really a stage of mental adolescence. A few new ideas gave its students a feeling of superiority, and of independence of action that were positively sophomoric; although they succeeded only in bringing upon their heads the wrath of both Church and State. Armstrong¹ says: "Often as the variations in scientific theory have wrought their momentous consequence in human thinking, it has been their reflex effect on other departments of thought—philosophy, for example, or religious faith—that has constituted the chief element in their influence Who shall deny that the Reforming Age, with all its intolerance, its persecutions, its sufferings, its wars, was but a small price to pay for the world's heritage of intellectual and religious freedom?" Still further he says: "Dissatisfaction with the doctrines of the Church and the revolt from the mingled tyranny and corruption of the papal body were among the tap-roots of that growth whose fruitage is the modern spirit."

There have been several such transitional eras in the development of learning. It was but natural for thinking human beings to revolt from the airy fantasies, the misleading supernaturalism and tradition concerning disease that had been so long current. The pendulum had for centuries swung backward and forward between Greeks and Latins and Arabs until, in the sixteenth century, the Arabs had been almost forgotten, and the Church was trying strenuously to keep Galen and Aristotle from following in their wake. The superstitions of the Middle Ages, its belief in witchcraft, could end only when experimental science and the higher education of women as well as men had become unhindered.²

In art and architecture, and by means of printing, the horizon of students in the sixteenth century was vastly widened; just as the discovery of great new continents changed the ideas of geographers and historians forever. But in medicine there was, and could be, only a little more breadth or depth because science had not been wholly freed and made independent of religion. The sufferings of victims of the plague

¹ Armstrong, A. C., "Transitional Eras in Thought," 1904, p. 8.

² Sarton, George, "Science in the Renaissance." A lecture given at Mt. Holyoke College in 1929.

were not mitigated by astrology, no matter how real their belief in the power of the heavenly bodies. Ludovico Moro lost his kingdom as well as his wife because he accepted the predictions and advice of his astrologers and acted accordingly. But the best educated physicians of the time, with their bleedings and nauseating remedies, were scarcely more helpful in sickness than the astrologers. We may smile at the credulity of the sixteenth century; but even today there are people who cut their hair and nails according to the moon, believe the predictions in the almanacs, and pin their faith to a dried potato or a horse chestnut in the pocket. These are just as efficient talismans as the "pest dollars" of the Middle Ages, or their amulets containing arsenic paste, sewed up in a piece of dog skin and worn over the heart. Shakespeare said of such amulets:

"The mere despair of surgery, he cures,
Hanging a golden stamp about their necks,
Put on with holy prayers."

(*Macbeth*, Act IV, Sc. III.)

And in the "Faerie Queene" (Book I, Canto VII, stanza XXXV), when the knight meets the Faerie Queene and she finds that he is a magician, Spenser says:

"Men into stones therewith he could transmew,
And stone to dust, and dust to nought at all;
And, when him list the prouder lookes subdew,
He would them gazing blind, or turne to other hew."

In discussing the various countries of Europe we have not heretofore mentioned Russia, which for several centuries had been slowly emerging as a separate entity. Sanitary and moral conditions were no different there, however, than elsewhere in Europe, except that they were worse. In 1591 Giles Fletcher was appointed ambassador from Great Britain to Russia. In his *Journal* he wrote what later became the "Book of the Russian Commonwealth," in which he says: "The Emperor is a person of mean stature, enclining to dropsy, hawk-nosed, heavy and inactive . . . simple, and slow-witted . . . The people come from a steaming hot bath and plunge into the icy river stark naked. The women paint their faces so visibly that any man can perceive it, but their husbands delight themselves to see their foul women become fair images, . . . and give them an ordinary allowance for these colours."¹

In the midst of such vague gropings for something better than the

¹ Harrison, G. B., "An Elizabethan Journal, 1591-1594," 1929.

sixteenth century showed it is not strange that women were crushed between the upper and lower mill-stones of science and superstition. The massacres and tortures designed to purge the Church of heresies were quite enough to drive good and kindly women insane. Missionaries like Ignatius Loyola (1491-1556), the Spaniard who founded the Order of Jesuits, John Knox (1505-1572), the Scotsman who hurled his footstool at Satan, Martin Luther, a German who used an inkpot for the same purpose, gentle Saint Francis Xavier (died 1552), the Spaniard who planted Christianity in India and America, John Calvin, the Frenchman who caused the burning of Servetus and believed in infant damnation—each and every one of these men was intensely in earnest, actuated only by religious zeal to promote Christ's kingdom of peace and good will on earth. The century was certainly one of extreme contradictions.

Symonds¹ says that Italy, with all its refinement, was "not less brutal in its treatment of heresy than were the Germans, less rapacious than the Swiss, less cruel than the Spaniards, or less vain than the French, although among the Italians there were greater personalities, greater heroes and artists and writers than in any other nation." Even today in Spain men who look intelligent press their lips to a stone because it is said to have been once pressed by the feet of the Holy Virgin.

Trier with its seamless coat of Christ, Rome with the head of Saint Andrew, Naples with the blood of Saint Januarius, were not more proud of their holy relics than England with the remains of Saint Thomas of Canterbury, or Cologne with the bones of St. Ursula and her ten thousand virgins. But all this religious zeal was so curiously one-sided. Tasso (1544-1595) tells us that in his time honor was an exotic in Italy, not to be preserved if it interfered with pleasure; and the people of Italy were not very different from those of the other countries of the day.

Human nature changes little. Then, even as now, people desired pleasure and sought to avoid pain. And, if they sought to escape the plague by means of the bones of half a dozen saints, it was from ignorance, not from religious zeal.

Education, however, was spreading among women, and the Catholic Church no longer ruled in Protestant countries. Women were not so

¹ Symonds, J. A., "The Age of the Despots," pp. 467-468.

fond of being semi-prisoners in their homes as in earlier centuries. Spencer (*Faerie Queene*, Book V, Canto V, XXV) said:

“But virtuous women wisely understand
That they were borne to base humilitie,
Unleese the heavens them lift to lawfull Soveraintie.”

He admired Queen Elizabeth and her brains, and in his poem, “Colin Clouts Comes Home Again,” l. 189 ff, he shows Cynthia’s grace and beauty, and also her “peerlesse skill in making well.” Women were evidently awakening to the new education of the seventeenth century.

Chapter IX

Medical Women of the Seventeenth Century

I. GENERAL CONDITIONS IN THE 17TH CENTURY

DESPITE those few scholars of the sixteenth century who had seemed to initiate a real awakening of medical science, the seventeenth came in rather sleepily. Among scholars all over Europe there were bitter religious quarrels, and ever-widening rifts between Roman Catholics and Protestants. There was, however, more zeal among both men and women for real study in the natural sciences, particularly in entomology, botany, astronomy, and chemistry. But there was to be almost no progress in surgery from the time of Ambroise Paré until Lister's revolutionary techniques for antisepsis and asepsis at the end of the nineteenth century. Seventeenth century surgeons amputated a leg or an arm with incredible speed; but, without any knowledge of germs, without sterilized dressings or anesthetics, operations could scarcely have been unfailingly successful. Even running water in houses was almost unknown before the middle of the nineteenth century; and clothing was usually washed in the cold and contaminated water of streams and pools. Although there was great improvement in the practice of obstetrics as taught by Louise Bourgeois, Mauriceau, and their pupils, the midwives in Europe and the American colonies, on the whole, carried on their work with less efficiency than in the days of Trotula. They seemed to delight in making frequent digital vaginal examinations with unclean hands and long finger nails with which to break "the bag of waters". As a result puerperal fever, and the deaths of mothers and infants, were ordinary events among both rich and poor.

Socially and politically this century was not very different from those that preceded it. There was no real cessation of wars, though what wars there were were mainly civil ones, like the 'Thirty-Years' War in Germany, 1618-1648. The seventeenth was another century of



FEMALE ANATOMY IN THE 17TH CENTURY.

("Du Principe de la Génération de l'Homme." From Guibélet's "Discours," 1603.)

pestilences, somewhat changed in character perhaps, but no less virulent. The Black Plague in London in 1665 was stopped only by the great fire of 1666, after which cleansing calamity, as housing conditions in London were somewhat bettered the life of its survivors was more hygienic and comfortable. The stirrings of independence among the peoples of Europe, especially in England and Holland, drove the hardy Pilgrims to America, the brave Huguenots to Canada, the Waldensians of Italy to Switzerland. For liberty of conscience and freedom to worship as they chose no hardship was too great to be overcome.

Although universities multiplied rapidly in this century the favorite medical schools of Europe were still those at Padua, Leyden, Paris and Montpellier. To none of the fourteen new universities founded in Germany and Holland after the long wars, were women admitted. In their medical schools the teaching was generally only by lectures and in Latin. Anatomy was taught by dissections of the bodies of a few criminals during a gala week, or on bodies surreptitiously snatched from graves, the result being that students of private teachers might often get better instruction in anatomy and the bedside diagnosis of disease than could be had at the universities. The first articulated skeleton in Europe was placed in a class room in Edinburgh in 1697; but, if we may judge from the gossip of the time, the medical students there were an unruly lot and scarcely appreciated what they were shown. In Germany also the students seemed to have been rather boisterous rioters, more addicted to hazing than to study. A doctor was there called "*medicus purus*", "*medicus ordinarius*", "*physicus*", or "*medicus pestilentiarius*". Surgeons were generally "*feldscheerer*" (i.e. "army-shavers"); being classed with executioners, mountebanks and barbers. Garrison (pp. 210-212) tells us that in all Europe there was little clinical work, and practically no general teaching in the language of the country. Evidently "professors of anatomy" as they were painted by the great artists of the period, Rembrandt and Rubens,¹ were very greatly idealized.

When it came to worship of the past and lack of independent investigation it cannot be denied that the women were as great sinners as the men. If the medical women of the period did gain any practical experience they failed utterly to record it. With very few exceptions, they seem to have been too chastened by the shibboleth of masculine superiority even to attempt to make their own work known. Whether

¹ Holländer, Eugen, "*Die Medizin in der klassischen Malerei*", pp. 34-60, 1903.

this general feeling of feminine inferiority was merely the result of long centuries of subordination, or whether, as has been suggested, their apparent apathy was due to ill health, to glandular defects, to too frequent child-bearing, to too little physical exercise, or to a sort of hypnotic state of reverence for their physically superior male relatives it is hard to say.¹ Garrison² suggests that the great and outstanding men like Harvey, Sydenham, and others, show that "the century was one of individualism rather than collectivism". Harvey, as we know, suffered professional ostracism because of this very individualism, his patients dropping off in great numbers as soon as he announced his new theories of the circulation of the blood. From the moment that Louise Bourgeois was accused of causing the death of a royal patient, her obstetric work grew noticeably less. Public opinion gives grudging praise either to men or women; but on outstanding women adverse criticism always falls more heavily than on men. Perhaps it is this handicap that deters women even more than men from attempting to go counter to the popular current.

Besides this lack of scholarly activity, or even scholarly curiosity, among seventeenth century women, they lowered themselves by continuing to condone the double standard of morality. They might flirt secretly; but their husbands had mistresses quite openly. These flirtations were not conducive to high thinking, nor were most women's frequent pregnancies, and almost equally frequent periods of mourning for dead children, any encouragement to intellectual activity. To a man like Evelyn, his outside interests were more important than the birth or death of children, if we are to judge, that is, by the few lines he gives them in his diary. As for the women of the lower classes, they had to work so hard, indoors and out, as to have no desire for study even tho it were to learn how to give more intelligent care to their own children.

Evidently, then, lack of opportunity for education, though it was extremely important, was not the sole explanation of the seventeenth century woman's inefficiency in the arts, literature and medicine. The handicaps that stopped her intellectual development continued in force up to the middle of the nineteenth century in most of the countries of Europe and in America. In some parts of Ireland, in Portugal, Morocco, India, and Russia they were in force until very recently. If

¹ Johnson, G. W., "The Evolution of Women," 1926, p. 50, quoting from Fraser, Wright, Thomas, "The Homes of Other Days", p. 291.

² Garrison, p. 241.

seventeenth century women were not content with their lot they saw no alternative, and they lacked initiative or courage to try to change it. If they had been able to work collectively for the reform of their condition, or had been able to found such colleges and schools for girls as were to be found in republican Switzerland and America two hundred years later, the story of medical women during the past three centuries would undoubtedly have been far more brilliant.

It was obviously unfair that medical women, denied a university education in every country but Italy, should yet be blamed for their lack of success. Daniel Defoe saw this clearly. In 1697 he wrote an "Essay upon Projects" in which he strenuously advocated giving women as good an education as was given to men. He says, "I have often thought of it as one of the most barbarous customs in the world, considering us as a civilized and Christian country, that we deny the advantage of learning to women. We reproach the sex every day with folly and impertinence, while I am confident that had they the advantages of education equal to us, they would be guilty of less than ourselves." He adds that the women of his time learned only to stitch and sew and make baubles, when God Almighty had given them capacities for learning equal to those of men. He proceeds to draft plans for an academy for women, not a bigoted nunnery, but a school something like the public schools of Eton and Harrow, where women willing to study should have all the advantages of learning. To be sure Defoe thought it necessary to protect them from adventurous swains, by a moat and walls; but he felt he could put them on their honor against intrigues and indecencies and scandalous affairs. Were this done, he concludes, women would shine in society, and would hold their own in any conversation.

Seventeenth century women had also to face a special handicap, a recrudescence of the witchcraft superstition in a particularly virulent form.¹ No queerly acting person was exempt from suspicion. Even in New England, twenty witches were executed on Gallows Hill in Salem, Mass., in the single year 1692, much to the "satisfaction of the lawyers and clergy". Many were the books written to justify the tortures used

¹ Even before Queen Elizabeth died there had appeared a manuscript book on demonology, a "Devil-Worshipper's Prayer Book", exorcising eight demons by name, among them Simon Forman, an astrologer and necromancer, who had an enormous practice among women, and Dr. Dee, who was often called by Queen Elizabeth for protection against intrigues. A certain Joseph Glanvil published a book called "Saducismus Triumphatus, or Full and Plain Evidence Concerning Witches and Apparitions".

to wring "confessions" from the unfortunate victims.¹ In 1618 two harmless old women were burned at the stake in Essex County, England, for causing the death of the son of the Earl of Rutland and preventing the Countess from having other children—one of the worst of crimes. Even Sir Thomas Browne, with all his piety and wisdom, believed in killing witches, and so did Sir Matthew Hale, one of the most learned judges of the century. During the reign of James I, an Agnes Sampson was tried and convicted of being one of two hundred witches who sailed in sieves from Leith to North Berwick to attend a "devils' sabbath". The king actually believed this nonsense, and allowed her to be tortured into confession and then burnt. It is difficult for us to realize that no less than 40,000 persons were killed for witchcraft in the seventeenth century alone. The really surprising thing is that the women doctors and nurses of the day, though often under grave suspicion of witchcraft, yet had the courage to continue their humble ministrations for the sick.

The women who were doing medical work at this time seem to have been divided into three classes. Lowest were the nurses, including the Béguines and the other nuns and "sisters" of various sects. Then came the midwives, who were very important until long after the advent of Peter Chamberlen and his obstetric forceps in 1630. He, by the way, would gladly have taught women the use of this instrument but they refused to be interested in anything "different." To him the idea of a school for midwives was a good one; but the women themselves were indifferent to it. Women apothecaries and regular practitioners made up the third class, although, as has been noted, they found it difficult to obtain licenses to practice unless they were content to do so for charity.² In France, after the sixteenth century, women surgeons belonged for a time to the "Corporation of Surgeons"; but, as men came back from the wars, they claimed the best positions. Until 1694 widows of surgeons had been allowed to carry on their husband's practice; but

¹ Matthew Hopkins, a notorious witchfinder, published a book in 1645 with the following title: "A True and Exact Relation of the several Informations, Examinations and Confessions of the late Witches, arraigned and executed in the County of Essex . . . who were arraigned and condemned . . . July 26, 1645. Wherein the several Murthers, and devillish Witchcrafts, committed on the bodies of men, women, and children, and divers cattell, are fully discovered." He was only one of many who rushed into print with tales of poisonings at long distance by self-confessed women under the power of the Evil One.

² After 1614 no women could obtain a license to practice surgery.

After 1617 no woman could become an apothecary or pharmacist.

After 1642 no woman could obtain a license as midwife without an examination by six surgeons and six midwives.

After 1662 every woman could obtain a license as midwife by payment of a good fee.

even this privilege was then denied them, except in cases of dire want. This left to women only midwifery, and even this was fast becoming also a man's province.¹ In other words, for various reasons, and from various directions, the whole tendency of this century was to squeeze women out of the medical profession.

The seventeenth was a century of increasing material prosperity. New imported foods were coming into the larder: coffee, tea, potatoes, and chocolate among them. And a queer new plant called tobacco, introduced into Europe in the sixteenth century by Nicot (1530-1600), the Portuguese ambassador to Virginia, was becoming popular. With new kinds of food and more wealth was coming more elaborate entertaining. A much more prosperous middle class vied with the aristocracy in display, in elaborate dinner parties, in the size of their coaches, and in the upholstery of their sedan chairs. It is hard to believe that this material prosperity could have taken from men or women their natural feelings of sympathy for the sick and poor. Yet we find that during a famine, in the time of King James I, it was deemed necessary to pass a law forbidding the use of starch for the immense ruffs worn by the men of the period, in order that "the corne [i. e. wheat starch] thus wasted should be used for the people's food."

Extravagance in food was exceeded by extravagance in dress. Women walked about proudly in stiff and voluminous skirts which swept the floor, and wore corsets so tight that it was difficult for them to move. Their hair was not less ornate than that of the men, being decorated even with stuffed birds or artificial flowers. Contemporary portraits by such artists as Murillo (1618-1682) and Velasquez (1599-1660) show even little girls hampered with long full skirts, and boys enveloped in silken hose and velvet breeches. These comments apply to the nobility and their followers. To the Puritans and Quakers of the day brilliant clothes were obnoxious.

Several of the greatest writers of the century took occasion to hold up to ridicule some of the most shallow pretenses of the medicine of the period. In "*Le Malade Imaginaire*," "*Les Femmes Savantes*" and other plays, Molière in particular exposed the insincerities and medical stupidities of his contemporaries. In "*Le Médecin malgré lui*," he makes a psychological study of the uneducated doctor and the easily frightened patient, the hysterical families, and the officious nurses who run about with enormous rectal syringes, huge bleeding bowls, and cannon-ball size pills. After Molière's death, an

¹ Mlle Chauvin, "*Des Professions accessibles aux Femmes*," 1892. See also Lipinska, op. cit., Chap. XIII.

Englishman named Ravenscroft, in 1697, wrote an amusing little farce called "The Anatomist, or Sham Doctor," in which a certain lover is obliged at great risk of his life to play the part of a hanged criminal on a dissecting table. He wins the fair lady, but not before opportunity is afforded for a good deal of satire on prevalent beliefs in astrology, fortune-telling, excessive purgation, bleeding, and in the pompous use of long and meaningless Latin terms.

But then, as always, the pompous pretender gained a certain advantage over the sincere but modest practitioner. A so-called doctor in Marseilles, who never had a patient, wrote a medical book, the "*Praxis Medica*", which was reprinted twelve times and translated into seven languages; while Jean Delorme, court doctor to Louis XIII, known all over Europe for his skill in curing the plague, never published a word to let the world know his methods of diagnosis and treatment of any disease. William Harvey was, as we have seen, rewarded for his brilliant discoveries in anatomy by losing caste among his contemporaries; while Sydenham, whose studies of ancient writers were after all rather superficial, made a reputation by writing quiet observations of his patients and their symptoms in a very practical but uncontroversial way. As for the medical women of the seventeenth century, they, like those of earlier years, crept about their work so quietly as not to attract the facile pen of the dramatists and satirists; while, except for certain obstetricians, they wrote almost nothing about their patients or their medical work.

The Church, which had originated medical schools and their curricula, whose various institutions had once been the chief instruments of medical aid, had now fallen far behind, and was no longer a significant factor in medical work. Multiplication of saints was not efficacious. Although there were now eighteen saints to cure colic, ten to inhibit convulsions, seventy to prevent accidents in labor, eighty-five to treat diseases of children, twenty-three for gout, etc., etc., they were all being increasingly ignored. Saint Agatha, for instance, who died of cancer, and was, according to the law of similars, supposed to be able to cure cancer of the breast, was appealed to, but only because the physicians of the day shunned such operations, and, if their cancer patients were sent on pilgrimages to the distant shrine of some saint, they were likely to die conveniently far from home. Hospitals and infirmaries to which surgical patients might be sent for care were now fewer, for many of the beautiful buildings of former times had been allowed to go to ruin with the closing of the monasteries and abbeys that conducted them. There was no longer in the seventeenth century a learned abbess

in any English infirmary to walk gently at night through her wards to see that burnt out candles had not set fire to anything or to administer consolation to the dying. But, unfortunately, although the monastic hospitals had been suppressed, no provision had been made for substitutes. Monasticism was a medieval institution and a Roman Catholic one: Protestant religious and charitable institutions in the seventeenth century were still comparatively few.

II. WOMEN OBSTETRICIANS IN ENGLAND

SINCE obstetrics was the one specialty left open to medical women in the seventeenth century it was not unnatural that Ambroise Paré should in 1573 write a book for French midwives, and open his own house as a school for their education. But his book incurred the wrath of the surgeons of Paris because, being written in French, it gave promise of being popular. They immediately jumped to the obvious conclusion that, if midwives were well educated, they could and would undertake all sorts of surgical operations which hitherto men alone had performed. As a fact, since the beginning of the century men were being frequently called by midwives to help in a difficult or operative labor case. Mauriceau (1637-1709), for instance,¹ went not only to the Hôtel Dieu to assist the midwives there with their charity patients but also to the bedside of noble ladies during their confinements. His book on the diseases of pregnancy and the puerperium, published in 1668 and illustrated with fine copper plates, was used for one hundred and fifty years until corrected and superseded by Madame Boivin's book in the early nineteenth century.

No sooner, however, did it appear that men were becoming established as experts in midwifery among the fashionable society folk than a hue and cry went up from the lower classes at the indecency of having a man in the lying-in room. Cosmo Viardel (about 1671) and Philippe Hecquet (1661-1737), two of these champions of the modesty of women, actually wrote books in which they fulminated against the usurpation of the art of obstetrics by men. Hecquet exclaims, "Think of the danger to an innocent wife from having been touched by a strange man!"

¹ Mauriceau, as we shall see later, was far more accomplished than his predecessors; but he still had some of their superstitions. He thought, for instance, that a baby had to be baptized *in utero* if there was a chance of its dying before birth. For this purpose he invented an intra-uterine syringe with which to sprinkle its head in case of any emergency. He is said to have known some of the Chamberlens. (See article by Hunter Robb, *Johns Hopkins Hospital Bull.*, April 1895.) It was Hugh Chamberlen who translated Mauriceau's book into English.

He shudders at the sacrilege. Viardel goes further and protests against the similar indecent exposure of the infant. Its sensibilities on coming into the world, face to the ground, would be so shocked that its cries of "Oh-ah" might be interpreted as expressing resentfully, "Oh Adam, why did you sin?"; at the same time that the groans of its poor mother, "Oh—eh," might mean "Oh, Eve, why did you sin?" Viardel adds, parenthetically, that if any midwives were not sufficiently well prepared to care for their patients properly they should be educated at public expense; but that all should not be condemned because of the ignorance of a few.

The modesty or immodesty of the mother during the last hours of her labor had not usually been taken into account. Custom had decreed that the lying-in room should be well filled with witnesses of the birth. The guests took turns walking with the mother as long as possible; she was bled copiously and syringed often. We read of the accouchement of a certain princess of Bavaria whose delivery was immoderately delayed. To hasten birth her abdomen was covered with the fresh, warm skin of a goat that had been flayed alive at the door of the lying-in room, much to the disgust of the visitors, some of whom were legally obliged personally to witness the birth.

In Holland and Germany during the seventeenth century there was scarcely a question as to utilizing the services of men-midwives. Hendrik Van Deventer (1651-1724) and Hendrik Von Roonhuijze (born 1625), both of whom were obstetricians and gynecological surgeons, did what they could to teach midwives the proper conduct of labor and the correct anatomy of the pelvic organs. A great "*Hebammenbuch*" of nearly two thousand pages, published in 1652 by Gottfried Welsch and containing translations from all his predecessors, including Louise Bourgeois, had a large sale. And for those who could read Latin there were the huge folios of Spach, 1597, of Schenck, 1608, and one by Fortis of Padua, 1668,¹ the illustrations in each being from the same old sources. Alice Clark tells us (op. cit.), that in general, however, men midwives were still considered interlopers.

Some of the midwives held a good position in society, and the best of them were well paid for their services. When Raynald's "Byrthe of Mankynde" was published, the translator in his preface assures the reader that "the book will be a help to the midwife and a comfort to the mother," and adds that it should not be suppressed for fear of staining a woman's modesty or of exciting the curiosity of boys or knaves.

¹ Witkowski, G. J., "*Histoire des Accouchements chez tous les peuples*", 1887.

Jane Sharp says that she publishes "The Midwife's Book" (1671)¹, in the hope that through studying it the "common people of the land" might have as safe and rapid deliveries as the "Ladies of the country," although later she says that the country women had easier births than the tender and delicate ladies of the nobility. Both Jane Sharp and Mrs. Cellier,² who was several times in the stocks for her intrepid disobedience of the laws, were loud in their demands for an opportunity to give midwives a better medical education and greater efficiency. But their pleas fell on deaf ears. There were of course many English midwives as clever and well paid as the French accoucheuse of Queen Henrietta Maria, Madam Peron, to whom the king gave £300 for her services. Hester Shaw of Barking parish, London, received almost one thousand pounds from Abraham Perrot, Gentleman, for her skill "a month before the fire," that is, in August, 1666. It was she and Mrs. Whipp who, in 1634, had appealed for an act of incorporation of midwives, which was evidently to include such men as Peter Chamberlen, who was a barber-surgeon, i.e. not a university trained man. But such an act was not passed, and Peter alone was licensed by the bishops and the archbishop of Canterbury.

In passing, it may be said that both Peter Chamberlen and his son Hugh secretly used the famous short forceps now associated with their name, and both were earnest in their attempts to improve midwifery, even though neither had had university training. In 1646 Peter published a book called "A Voice in Rhama, or the Crie of Women and Children", in which he accuses the bishops of being more interested in taking "Oath and pay Money" than in helping to give midwives instruction which may mean "Life and Death of two or three at one time, besides the Health and Strength of the Whole Nation." He says that it was then commonly believed that, when a man was called in to assist at a birth, either the mother or infant were at the point of death; but that many a midwife is more capable of delivering a woman than some surgeons. And he continues, "My Father, Brothers and myself (though none else in Europe that I know) have by God's blessing, and our industry, attained to, and long practised, a way to deliver a woman in

¹ Garrison, page 207, speaks of her as the "perhaps mythical Jane Sharp." Her "Compleat Midwife's Companion" was first published in London in 1671. In no other place apparently is her identity doubted.

² Witkowski gives a picture of Mme. Cellier sitting in the pillory in an ample robe and hood, her face set fiercely as a result of the indignities to which she was forced to submit, not once but three times, for libel. She was twice in prison at Newgate for treason, being a strong papist; but she was released as not actually guilty. Her "Meal Tub Plot Exposed" implicates her accusers, who forged her name and hid several papers in a meal tub in her house.

this case without any prejudice to her or her infant." Thus he advertises himself and his forceps. But his son Hugh points out—in "The Accomplisht Midwife"—that it obviously can not be "as great discredit to a midwife . . . to have a woman or child saved by a Man's assistance as to suffer either to die under her own hand."

The two most accomplished and best known midwives of England in this century were, as mentioned, Jane Sharp and Mrs. Cellier. Nobody knows where they obtained their skill; but, as it was considered proper for many on-lookers to witness a birth, they may have profited by such opportunities to gain practical experience. There was also real information in some of the newer obstetrical books. In the English editions of Raynald's work some of the illustrations had been suppressed as likely to offend the modesty of the reader. In her own book Jane Sharp was not hampered by modesty. She had been in practice in London for thirty years when it was published, in 1671. It was written in easy language, for, as she says, "It is not hard words that perform the work—words are but the shell that we oftimes break our Teeth with them to come at the kernel. I mean our braines to know what is the meaning of them."¹ Her lack of training in grammar does not obscure her intent. She insists on the study of anatomy as well as on the good conduct of labor, although she finds it difficult to teach anatomy merely from pictures. "Long and diligent practice," she says, "is necessary for skill;" and, "where there is no Men of Learning, the women are sufficient to perform this duty." Her own knowledge of this subject, she says, came from experience, and, she adds, "from books in French, Dutch, and Italian, translated at great cost." Evidently Jane Sharp was of the same mind as Culpeper who dedicated his directory to the midwives of England, and advised them to ask help of God, "not of the Colledg of Physitians."²

¹ Sharp, Mrs. Jane, "The Compleat Midwife's Companion", 4th ed., 1725. "The Midwives' Book, or the whole Art of Midwifery discovered," 1st ed., 1671.

² Jane Sharp's book was written not only for nurses but also "to direct child-bearing women how to behave themselves." It is a little volume of 418 pages, 4 x 7 inches, and is dedicated to Lady Ellenour Talbutt. It is, however, a *multum in parvo*, its six parts covering anatomy, signs of pregnancy, sterility, conduct of labor, diseases of pregnancy, and post partum diseases. It tells how to choose a nurse, how to care for the baby, whether it has "scald head or smallpox." She evidently had a copy of Trotula's book for reference and used it freely in her description of the uterine diseases and difficulties of menstruation. Her book went through several editions, the fourth of which, published in 1725, had three illustrations and a new title page. In one of the illustrations a woman is propped up in bed eating her porridge, while the baby in its cradle near the fire is surrounded by a crowd of visitors coming to its christening. This edition has 244 pages, printed in small type. It ends: "To God alone be all Praise and Glory. Amen. Jane Sharp."

Mrs. Cellier was a different sort of character from Jane Sharp—one of those boisterous ranters who enjoy persecution for righteousness' sake. Although a papist she was a midwife of excellent reputation, well-to-do, and well educated. She felt that it was impossible to elevate the status of her profession unless the women who belonged to it organ-

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A Scheme for the Foundation of a Royal Hospital, and Raising a Revenue of Five or Six-thousand Pounds a Year, by, and for the Maintenance of a Corporation of skilful Midwives, and such Foundlings, or exposed Children, as shall be admitted therein. As it was proposed and address'd to his Majesty King James II. By Mrs. *Elisabeth Cellier*, in the Month of *June*, 1687. Now first published from her own MS. found among the said King's Papers. *Folio*, containing nine Pages.

To the King's most excellent Majesty, the humble Proposal of Elisabeth Cellier,

Sheweth,
THAT, within the Space of twenty Years last past, above Six-thousand Women have died in Child-bed, more than Thirteen-thousand Children have been born abortive, and above Five thousand *chry/m* Infants have been buried, within the weekly Bills of Mortality; above two Thirds of which, amounting to Sixteen-thousand Souls, have in all Probability perished, for Want of due Skill and Care, in those Women who practise the Art of Midwifery.

Besides the great Number which are oversaid, and wilfully murdered, by their wicked and cruel Mothers, for Want of fit Ways to conceal their Shame, and provide for their Children, as also the many Executions on the Offenders.

To remedy which, it is humbly proposed, that your Majesty will be graciously pleased, by your Royal Authority, to unite the whole Number of skilful Midwives, now practising within the Limits of the weekly Bills of Mortality, into a Corporation, under the Government of a certain Number of the most able and matron-like Women among them, subject to the Visitation of such Person or Persons, as your Majesty shall appoint; and such Rules for their good Government, Instruction, Direction, and Administration, as are hereunto annexed, or may, upon more mature Consideration,

be thought fit to be annexed.

That such Number, so to be admitted, shall not exceed a Thousand at one Time; that every Woman, so to be admitted as a skilful Midwife, may be obliged to pay, for her Admittance, the Sum of five Pounds, and the like Sum annually, by quarterly Payments, for, and towards, the pious and charitable Uses hereafter mentioned.

That all Women, so admitted into the Thousand, shall be capable of being *chosen* Matrons, or Assistants, to the Government.

That such Midwives as are found capable of the Employment, and cannot be admitted into the first Thousand, shall be of the second Thousand, paying, for their Admittance, the Sum of fifty Shillings, and fifty Shilling a Year by quarterly Payments, towards the pious and charitable Uses hereafter mentioned, and out of these the first Thousand are to be supplied, as they die out.

That, out of the first Sum arising from the Admittance-money, one good, large, and convenient House, or Hospital, may be erected, for the Receiving and Taking in of exposed Children, to be subject to the Care, Conduct, and Management of one Governor, one female Secretary, and twelve Matron-Assistants, subject to the Visitation of such Persons, as to your Majesty's Wisdom shall be thought necessary.

That

MRS. CELLIER'S APPEAL TO JAMES II FOR A
ROYAL HOSPITAL
(*Harleian Misc. IV. 4p. 136-40. 1795. Courtesy
British Museum.*)

ized themselves for study as well as for work.¹ She recounts how, after the year 1642, midwives were "licensed at Chirurgions' Hall, but not before they had passed three examinations before six skilful midwives and as many Chirurgions expert in the Art of Midwifery." These provisions continued in force until 1662, when prospective midwives

¹ Clark, *op. cit.*, p. 275.

were obliged merely to pay their money "to Doctors Commons," and take an oath against papacy. "After this," says she, "the mortality of mothers and babies increased enormously." Whereupon she presented a "Bill," or petition, to the king, praying him to unite all midwives into a "Corporation by Royal Charter." This the king agreed to do; but, having promised, there forever the matter rested. In the meantime, however, Mrs. Cellier had compiled statistics showing the unnecessary mortality of mothers and babies which proper remedial measures might prevent. She says that, between 1642 and 1662, six thousand English women died in childbirth, thirteen thousand children were born abortive, and about five thousand chrysome (new-born) infants were buried; and asserts that, of this number, above two-thirds perished for want of "due skill and care in those women who practice the art of midwifery." Her plans for a Royal Hospital, well staffed and a model of neatness, affording care for mothers, for the education and registration of nurses, and for homes for illegitimate babies, as well as her plans for raising the money to carry on all this work, were carefully and logically worked out and would be a credit to the twentieth century. She failed for want of an enlightened public opinion, and because of the timidity and lack of co-operation of the midwives themselves.¹

Other midwives of the period could be mentioned did space permit. Aveling tells of Alice Dennis, who received large sums for her care of the queen when the children of King James I were born. She had three assistants at these confinements; and some time later one of her pupils, Margaret Mercer, was sent to Heidelberg to care for the daughter of James I in her confinement. There was a tale that a midwife named Labany, who officiated at the birth of the son of James II, substituted

¹ See Dictionary of National Biography, vol. 3. Her maiden name was Dormer. She married a Frenchman named Peter Cellier and undoubtedly was implicated in the popish plot against the king and protestants. For this she was condemned to stand three times in the pillory, and pay a fine of 1000 pounds sterling. She then published a vindication of herself, entitled "Malice Defeated, or a Brief Relation of the Accusation and Deliverance of Elizabeth Cellier." Another of her pamphlets was "The Scarlet Beast stripped naked, being the mystery of the Mead-tub the second time unravelled". Her "Scheme for the Foundation of a Royal Hospital", addressed to King James II in 1687, and other tracts, may be seen among the Harleian Miscellanies in the Library of the British Museum and elsewhere. It has been said that the failure of the king to carry out his promise to erect such a hospital as Mrs. Cellier proposed, together with a college for midwives and a nursery, made her so angry that her remarks on the occasion led to her condemnation to stand in the pillory again, where she saw her books burned before her eyes. At still another time she avoided the pillory by feigning pregnancy.

a strange baby for the royal child, who, according to the story, was still-born. Chamberlen was her accuser; but, it was claimed, falsely, and because he was sent for too late to deliver the child alive with his secret forceps. Whatever the truth of the story, she was acquitted.

The names of medical women occur frequently in the works of seventeenth century writers. Some were of noble birth, some scantily educated women of the poorest classes. Some of them wrote and taught obstetrics, others were simply good practitioners. Some were quacks, others herbalists, or mental healers, or believers in the efficacy of the king's touch, or they were apothecaries, or bleeders. Some were merely nurses, recruited from the lowest classes,¹ receiving wages less than those paid to servants, depending in some cases on fees paid by the towns to searchers of bodies about to be buried as victims of the plague or smallpox. Bills of mortality were first kept in England in this century, and it was ordered that the tolling of a bell should warn these women, "the ancient matrons sworn to their office," as well as the sexton, that a body was to be buried. The "searchers" would then appear, view the body, and report to the parish clerk every Tuesday night. Sometimes a woman would be appointed by the town to care for a pauper who had smallpox, as, for instance, Goody Peckham, who was paid five shillings for nursing a beggar, and twelve shillings for "nursing Wickham's boy with the smallpox." As she had to stay six weeks and be doctor as well as nurse with such a patient, the sum was not high.²

It is evident that the reputation of a medical woman, in those days, depended on her kindness to the poor as well as on her professional skill. If she worked entirely for charity, she did not incur the enmity of the men of the profession. Elizabeth Bedell is recorded to have "continually practiced surgery upon multitudes that flocked to her, and gratis, without respect of persons." But not all medical women worked only for the poor. The Rev. R. Josselin, writing in 1672, says in his diary, "My Lady Honeywood sent her coach for me: where I stay'd to March 10, in which time my Lady was my nurse and Phisitian. I hope for much good . . . they considered ye scurvy. I took purge and other things for it." We read that Mrs. Williams "with hir arte and care" set the "arme of Marmaduke Rawdon" and in "ten dayes itt was well againe."

Adam Martindale was healed of what sounds like impetigo by a poor woman who applied to his sores a salve of Iceland moss and

¹ Clark, Alice, *op. cit.* chap. VI, "The Professions."

² In 1621 Frances Holcombe was appointed to the staff of St. Bartholomew's Hospital on a relatively large salary because of her skill in curing scald head.

celandine in May-butter. Ralphe Hobbes is said to have preferred an experienced old woman when he was sick to the most learned man physician. The sister of a noted oculist, Sarah Turbeville (1700), studied with her brother, so that, when he died, she continued his practice with great skill.

For a woman to get a license to do surgery was, however, difficult, particularly after 1614 when the barber-surgeon charters came into force. To secure one a candidate had to be examined by the Bishop of London, who sought not so much the applicant's medical qualifications as to uncover possible heresy or witchcraft. After 1617, when the apothecaries were for the first time separated from the grocers, it was difficult for a woman to obtain even a license to compound medicines. If women did break the law, and act as surgeons and doctors, they were, of course, liable to prosecution and imprisonment; and such a fate did befall one Prudence Ludford, a surgeon, in 1683.¹ But the names of others occur in the records who, though unlicensed, escaped punishment. The case of Margaret Waltham, a "female practitioner" at Dorchester, was dismissed by the court, although it was recorded that a certain woman consulted her for advice as to her baby "with a rupture." Clark cites also the following (pp. 264, 265) all taken from trustworthy municipal records: "The Widow Foote cured Widow Huchins' lame leg" for which she received twenty shillings. In 1690 "Goodwife Wells cured Eliz. Skinner's hand"—she received ten shillings. Mary Olyve was paid 6s. 8d. "for curing a boye that was lame" at Mayfield; and 15s was given to "Widow Thurston for healing of Stannard's son" by the church wardens at Cratfield. In Somerset £5 was paid to "Johane Shorley towards the cure of Thomas Dudderidge. Further satisfaction when cure is don."

These few examples show that though women could not study medicine and surgery at well known institutions, some of them could and did study with private physicians or at private schools where they learned the practical art if not the science of medicine (whatever this may mean) and were able to do as much good in their communities as the men who had studied Latin and philosophy along with anatomy.

III. ENGLISH WOMEN AS PHYSICIANS

AMONG the English women who practised both medicine and surgery during this century, we find several of noble birth who

¹ Hertford County Records, vol. I, p. 328.

had been educated in the Italian universities. Lady Willoughby had studied medicine with her father, Dr. Percival Willoughby, and had married. After the deaths of her first baby and of three babies of a neighbor, she began to visit the sick professionally, and to gather herbs, and to make and prescribe remedies for such diseases as were then prevalent. During those years of civil war in England, medical men were scarce, and such medical care as she was able to give was appreciated. Her father said that she was a better obstetrician and diagnostician than he. Lady Warwick, Lady Arundell, and the wife of the Rev. Mr. Colfe of Lewisham, are recorded as being skilled in medicine.¹ Lady Arundell in 1655 wrote a small octavo entitled "Nature unbowelled by the most exquisite Anatomizers of Her choisest Secrets . . . for the use of all infirmities, internal and external, acute or chronical, that are Incident in the Body of Man." Lady Alice Lucy, whose home at Charlecote Hall was immortalized by Shakespeare, was also known for her medical ability; and Lady Falkland is said to have been "noted for her leech-craft." Lady Mainard, living in the time of Charles II, was said by Thomas Kenn, the bishop of Bath and Wells, to be "the common physician of her sick neighbors." He says, "she would dress their loathsome sores, give them diet and lodging until they were cured, and bury them if they died." Lady Katherine Neville, who died in 1715, spent large sums each year in quietly ministering to the sick. Elizabeth Bury is recorded as being a great scholar of anatomy, who "never neglected the wretch on the sick-bed."²

But our list of English medical women of the seventeenth century is still by no means ended.³ There was Ann (or Hannah) Woolley of London, who, in 1674, wrote a book on diet and medicine for women called "*Pharmacopolinum muliebris sexus*". It took the public by storm; was republished in 1688 and 1697, and translated into German, and probably into French. She also wrote cook-books and pamphlets about cosmetics. She was said to have been well educated and "good looking." She herself says that her mother and sisters were "well skilled in physic and surgery;" and that they taught her their secrets. When only fourteen years old she was a school mistress, then companion to a rich lady.

¹ The epitaph to the wife of Rev. Abraham Colfe reads: "She was above forty years, a willing nurse, midwife, surgeon, and in part physitian, to all, both riche and poore." She died in Lewisham in 1644.

² Kavanagh, op. cit., Chap. 16-18.

³ Woolley, Hannah, "The Ladies' Delight," 1672 . . . to which is added "The Ladies' physical Closet; or excellent receipts," etc. Also "The Gentlewoman's Companion, a Guide to the female sex," 1675.

Later, she was a governess, then a housekeeper among educated and influential people, where she made the best of her opportunities to study medicine and languages. In 1644 she married the head master of a school in Newport, Essex; after his death she married a man named Chalinor of Westminster. In the meantime she was busy with her writing. One of her books, the "size of a kitchen-apron-pocket," is concerned with cookery; but its final pages (pp. 256-291) give receipts in medicine and surgery. Her remedy for gravel is the roe of red herring beaten to powder, "as much as would lie on a sixpence," taken with a glass of Rhine wine every morning. For scurvy she prescribes wormwood, elder tops, caraway, and nutmegs, all mixed and cooked in new ale. For gout, the heads of six snails mixed with saffron, applied on leather to the soles of the feet. One of her remedies for pain is to be "laid in horse dung for eighteen days." For cancer of the breast she uses goose dung and celandine juice. For forgetfulness she gives rue, mint, and oil of roses, together with burnt hair as an inhalant. To prevent the pitting of smallpox she covers the face of the patient with a mask plastered with spermaceti and beeswax. To hasten labor she advises a drink of powdered amber in broth or caudle, which "by God's help," will produce a "dead or alive infant speedily." For a "cough of the lungs" she uses the flesh of a hen plucked and split alive, then cut into quarters and cooked with seventeen ingredients. Green walnuts are useful to her for the treatment of all sorts of troubles from sore eyes to sterility. One might have little trouble in finding her ingredients; but their efficacy is another story.

Several other medical women deserve notice as authors. Elizabeth, Countess of Kent, published, in 1670, a "Manual of Choice Remedies, or Rare Secrets in Physic and Surgery". The Duchess of Newcastle wrote a treatise on "Physic and Chyrurgery", which subjects she had studied as "heart balm" after the philanderings of her husband. John Evelyn in his "Diary" praises the mental qualities of this lady, not hesitating to compare her to the most intellectual women of history. Evelyn also remarks in his "Diary" as having supped one evening with a woman doctor named Everard, "a great chemist." We also find the record of a Mrs. Elizabeth Walker, the proprietor of a pharmacy stocked with all sorts of remedies. Of Lady Ann Clifford (1590-1676), who was related to most of the noble families of England—Russells, Bedfords, Sackvilles, etc.—historians say that she was very learned both in literature and the sciences. Despite the fact that her face was horribly pock-marked she was able to get married three times. Her last twenty years



PROFESSOR ANNE MORANDI
MANZOLINI DISSECTING A BRAIN.
1760.

*(Reproduced by courtesy of the
British Medical Women's Federa-
tion.)*



LUCY HUTCHINSON
AND HER SON.

*(Reproduced from a print in the
British Museum. By permission.)*



ANNA MARIA VON SCHURMANN,
1607-78.

*(From a portrait by Lievens in
the National Gallery, London.)*



DOROTHEA CHRISTIANA ERXLEBEN,
M. D., 1754

*"Summos in medicina honores et
doctoris gradum."*

were as a widow, and these years she devoted to personal charities for the sick. She boasted that she never touched wine or physic herself, though she prescribed them for her patients. She built hospitals and almshouses; and, having provided them, proceeded to give their patients her personal service.

But not all the medical women of the century were as praiseworthy as those above named. Several in the records belonged to a different class. There was one, Joanna Stevens, "a Fool and Rogue in one," who, with two Italian women, compounded deadly poisons, which they put into rings and flowers and food in minute but deadly quantities. Shakespeare, in "Cymbeline" (Act I, Sc. V, ll. 12-13) was probably referring to some such person as she when he says that the Queen studied to be an apothecary in order to concoct poisons and their antidotes.

Lucy (Apsley) Hutchinson (1620-1675), best known for her biography of her husband,¹ was a precocious child, who, at the age of seven, had eight tutors, and could read and write in five languages. At a very early period she translated Lucretius into verse. Her father, who belonged to the noble family of Apsley, was Lieutenant of the Tower of London, which was then a royal castle as well as a political prison. Her mother was "a universal nurse and doctor," able to care for sick or wounded prisoners as well as for the families of the other Tower officers. Lady Apsley had nine children; but, although she studied all the newest books on pediatrics she could not "raise" more than five of them, despite the fact that she was unusually successful in treating the children of others. Her knowledge of chemistry, and of the methods of combining drugs, she gained from Sir Walter Raleigh while he was imprisoned in the Tower. She taught all her daughters how to ease pain and dress wounds, but Lucy alone became really proficient, partly because of an inherited liking for the art, partly because of a religious desire to be of use to the sick, but partly also because her face was so pitted with smallpox that she supposed she would never be asked in marriage. Despite her handicap she was married at eighteen, in 1638, to Colonel Hutchinson. Because so many of her young friends had died, or become insane, in childbirth, she had rather dreaded having children. She, however, survived a good many confinements. She miscarried twins in 1639, at the fourth month, and the following year she again survived the birth of twin sons. In 1641 she had another son who died when he was six years old, and soon another who lived but four years.

¹ "Memoirs of the Life of Colonel Hutchinson by his Widow, Lucy" (Hutchinson) First published in 1806.

Such was the family history of most women in those days. Colonel Hutchinson, a regicide, was imprisoned in Nottingham in 1643. His family lived with him there, and Lucy was called upon to care for all the prisoners who were ill or injured. She tells about some of her cases, mentioning, among others, a wounded soldier who bled to death before he reached her rooms. Her balsams and plasters were famous for their healing powers; and it was said that she "dressed wounds as well as any man surgeon." Against her husband's will she treated many an enemy soldier. She also tried to improve the living conditions and the rations of the prisoners, but this line of effort did not appeal to those in authority. Lucy quotes a line from her own translation of Lucretius apropos of their attitude: "Men have marble, women waxen minds."

In Scotland during this century there was a famous medical woman, Lady Anne Halkett (1622-1699), who served as a surgeon in the royal army at the battle of Duntermline and at others. In one evening, she tells us, she dressed three-score wounded soldiers. "Some of the wounds had a frightful odor, and the clothing of the men was full of vermin and blood; some soldiers had enormous scalp wounds, others had mangled arms." But she never flinched, and organized her assistants as well as possible under the circumstances. At Perth, in 1650, after the battle of Dunbar, the King in person, and with some ceremony, thanked her. The whole story of her life, as told by herself in her autobiography,¹ a little book of 116 pages, published in 1875 by John Gough Nichols, and by her other biographers, is decidedly thrilling, for she had many adventures and some love episodes, besides, incidentally, writing twenty-one books on religious subjects. Like Lucy Apsley, her parents were of noble blood, her father, Thomas Murray, having been called from Scotland to be tutor to the young prince, who was afterwards Charles I. He died when Anne was still a child, and her mother attended to her education, but where she got her medical skill she does not say.

Not without reason does Nichols call her the Miss Nightingale of her time, but she was not only a nurse, but also an obstetrician, an army surgeon and a physician. On p. 66 of her autobiography, for example, she describes her daily military life at Fyvie for five years, during all of which time she was tending sick and wounded men in the army, women dying from cancer, men dying insane, and children dying of fevers. While she was a prisoner at Newcastle, she was sent every sort of ailing person, and she was constantly called upon to perform

¹ "Lady Anna Halkett, The Autobiography of", ed. by J. G. Nichols, 1875.

operations and tend women in labor. Although her religious books have little interest for us today, we can but admire her zeal, which was as great for the conversion of souls as for treating the ailments of bodies.¹

The case history of Anne, Viscountess Conway, as it is given in contemporary correspondence² and records, gives a most revealing picture of the medicine of the day, and deserves inclusion at this point for that reason. Born in Kensington Palace in 1631,³ at the age of twelve Anne had a mysterious fever which left her subject all her life to severe headaches. The interest of these headaches lies in the fact that, at one time or another, almost all the most noted English physicians of her day were called in to prescribe for her. When she was a child the famous William Harvey was the family physician and personal friend of the Finches. He was puzzled by Anne's headaches; but said vaguely that they might be one of the sequelae of her fever. He suggested trepanning for relief. Sir Thomas Willis of Oxford, the noted brain anatomist, was next called to attend her, but he could suggest nothing. Sydenham, "the second Hippocrates," was sent for; also the great Mayerne; but neither was able to give her relief. Sir Kenelm Digby was asked to try his "sympathetic powder" and magical remedies; and the great impostor, Valentine Greatrakes, tried his magnetism—all to no avail.

At her father-in-law's suggestion Anne bought Parkinson's "Herbal," hoping by a study of its drugs to cure her headaches herself. Next her brother, John Finch, went to the medical school at Padua in order to seek a new remedy for her there. He writes her of the various medicines used by its great men; and, being himself a victim of the ague, he

¹ See the "Dictionary of National Biography." Anne Halkett must have been an emotional person in her youth, for she says that she always went to church at five or six o'clock in the morning and prayed for hours at a time, fell in love with a married man whom she saved from prison, and finally married Sir James Halkett in 1656 in order to care for his two daughters. She was a devoted royalist, but her vicissitudes deprived her of most of her estates. James II gave her £100 a year in gratitude for her help in disguising him as a woman, and so facilitating his escape from his enemies. It is said that such was her medical skill that she had many patients from far-away parts of England and Scotland.

² Nicolson, Marjorie Hope, "The Correspondence of Anne, Viscountess Conway, Henry More, and Their Friends", 1930.

³ Anne Finch's father was Recorder of London and Speaker of the House of Commons. After Anne's marriage to Edward, Earl of Conway, she lived at Ragley Castle. She wrote a treatise on philosophy, of which the title alone contains fifty words. This was translated into Latin and published in Holland; then later, in 1692, published in English. Anne's religion was changeable. She was at one time a theosophist, at another time an Anabaptist; she died a member of the Society of Friends, having been converted by Penn and Fox.

says, "I was lett blood, used cupping glasses applied to my shoulders, Glisters and Purges, all within two days." But he found nothing for her.

Meanwhile Sir Thomas Willis was salivating her with mercury; and Sir Thomas Mayerne "made her worse" by the "Powder of Charles Huis, and a Flux every month." Then Willis, being called a second time, ordered her head to be shaved, and vesicatories applied to it, "blistering plasters to all the hinder parts of the head." These plasters were made "of red lead and sope, with double the proportion of the Plaster of Paracelsus." They proved as fruitless as endless other treatments. It is said that one of her doctors charged six pounds for each pill, and that frequently a "course of medicine" cost her one hundred pounds. None of the English surgeons had dared to trepan her skull, as Harvey had suggested, and finally she went to Paris for this operation. But the Paris surgeons hesitated to do this, and "opened her jugular veins instead." In January, 1658, she had the most serious "fitt" of all. Then she expected to improve after the birth of her baby in February;¹ but alas, after that, the headaches were no better. She was then given an "eagle stone" to wear in her pocket; and sought to forget her pain by discussing the immortality of the soul with her friend More. But, in 1660, came the death of her baby (of smallpox), and her headaches grew progressively worse. More advised her to take purgings and vomits, the red-powder of "one in Wales," to pray more fervently, to be patient until the weather changes, or "to use blew powder," or the "water cure," (i. e. cold douches to the scalp), and to be careful not to take an overdose of opium. He also suggested coffee and tobacco as remedies. Seven amulets were sent to Anne by friends in London; and she was also urged to try the laying-on of hands by a "certain Mat. Coker who had the gift of healing of the Apostles of old." Like Digby he could cure some people at a distance, but not Anne. Her friends Jeremy Taylor, Henry Stubbs, and others believed in the manipulations and mesmeric power of Greatrakes, and in 1665 he again tried his strokings on her, but to no avail. The "last man who knew everything" was Francis Mercury Van Helmont (1614-1698), a turner, weaver, painter, physician, chemist, teacher, man of letters, instructor of the deaf, philosopher, tutor to princes, counselor to the King, discoverer of the universal medicine and of the philosopher's stone. He was confident that he could cure the headaches. He failed as ignominiously as all the

¹ Lord Conway wrote that she had the prettiest nurse and the ugliest midwife that ever he saw.

rest. Sir Kenelm Digby was again sent for. He lived with the patient, or near her, for nine years, always asserting that pain was to be loved, not despised, or denied, or disregarded. Anne died under his care in 1679.

Such was medicine in the seventeenth century.¹

IV. PHYSICIANS AND MIDWIVES IN THE AMERICAN COLONIES

WITH the seventeenth century a new world comes into the medical picture, America, to which a few adventurous souls began migrating in 1607, when the first permanent settlement was made by the English at Jamestown, Virginia.

The first physicians in Virginia were Thomas Wotton and Lawrence Bohune. It took Wotton one hundred and forty-six days to sail from London to Jamestown, and he did not stay there very long; Dr. Bohune, however, found so much sickness that in 1610 he wrote to the London Company for more medicines and instruments, although he said that he had used several native herbs for teas for bloody fluxes and agues. He was killed in a sea battle with the Spaniards off the West Indies in 1621, and was succeeded by Dr. John Pott "and his wife Elizabeth." Evidently politics, jealousy, rum and sickness caused many dissensions in the little colony; Elizabeth went back to London to smooth out certain medical difficulties, after which matters were more satisfactory. The Jamestown colony moved inland in 1632 to the place now called Williamsburg, where the country round about being flat, and watered by a small stream, was not so malarial as Jamestown. At first the doctors' fees were paid in corn, tobacco, and wampum, together with a salary from the mother country. In spite of a "chest of Physique costing twenty pounds, and medical books to the value of ten pounds" mortality was high. Blanton² says that the clergy, barbers, quacks, and apprentices were also doctors. Some of them had studied the old medical authorities of Galen and Celsus, and a few new ones, such as Willis, Culpeper, and Paré, along with the old poetic version of the teachings of Salerno and the "*Rosengarten*". The most popular remedy of the

¹ It is not impossible that the one man whose advice was not followed was on the right track! He was William Harvey.

² "Medicine in Virginia in the Seventeenth Century," by Wyndam B. Blanton. The first volume, covering 1607-1700, is reviewed by C. A. Kofoid, in *Isis*, vol. 15.

pioneers was "sasafriz", a blood purifier; they also used snake-root and tobacco for fevers. Because these American medical men and midwives were so isolated from England they learned to be self-reliant. Their surgeons operated for club-foot and cleft palate, made Caesarian sections, and did the first oöphorectomy in the colonies even before such operations were commonly performed in England.

It is not surprising that the early doctors in North America were not exceptionally well educated for their profession. Need for their services was so great that any man who called himself a doctor was accepted by the sick; and any woman willing to do midwifery was soon busy with patients. There were bleeders, bone-setters, purgers, and midwives, most of whom had as a rule been apprenticed to older physicians or midwives.

Many of the ministers and colonial governors had studied medicine, along with theology, at such European universities as Leyden, Aberdeen, Cambridge, and Oxford. Governor Winthrop of Connecticut, for instance, was said to have been such a learned man that "his equal could nowhere be found." His case-records from 1657-1669 have been preserved, and are interesting because the same remedies were used by him as by "the old women" of his communities. Among them were elecampane, wormwood, antimony, iron filings, anise, elder, powdered sulphur, jalap, coral, mithridate, dried toads and sow-bugs. They also followed Sir Kenelm Digby's rule for curing ague: paring the patient's nails, and hanging them in a little bag to the neck of a live eel, which would then be left to die in a tub of water while the patient was recovering. Dr. Samuel Fuller,¹ who came over in the *Mayflower*, was the first medical man in New England. He had been an associate of Brewster in the University of Leyden. One man of the crew, Giles Heale, was a barber surgeon and had a few instruments and medicines. Their books included Linacre's translation of Galen, the pharmacopoeia of Paracelsus, Vesalius' anatomy, and Paré's surgery. Fuller died of small-pox in 1633,² leaving a third wife, Bridget, a young woman who was said to have been an expert midwife. He was followed, after a long interval, by Giles Firmin (or Ferman), who lived in Ipswich and at times taught anatomy. A little later Dr. John Clark opened a small medical school in Boston, in connection with Harvard College; and,

¹ Viets, Henry R., "A Brief History of Medicine in Massachusetts", 1930. Reviewed by C. A. Kofoed in *Isis*, 1931, p. 388.

² Holmes, O. W., "Medical Essays", 1842-1882, (page 317), says that Dr. Fuller was always letting blood. When he died in 1633 his library of twenty-seven volumes was valued at £10 and his instruments and drugs at £16.

before 1700, twenty-six graduates of it had gone to Europe and returned full-fledged physicians. After this date, apprentices were common; and medical practice was not very different from what it had been, and still was, in England. At this time the fees of these doctors were restricted by law; and their licenses were granted only after examinations "by some of the wisest and gravest of the community." Quarantine for the plague and yellow fever was enforced in Boston and Salem as early as 1648; but smallpox was a general scourge. In Savage's "Genealogical Dictionary" appear the names of 134 medical men, as having practiced before the eighteenth century. Twelve of these called themselves surgeons, one was a butcher, another a tavern keeper, while several were ministers.

Cotton Mather (1633-1728) left a manuscript entitled "The Angel of Bethesda"¹ in which he enumerates the common maladies of mankind, beginning, "Lett us look upon Sin as the cause of sickness. There are, it may be, two thousand sicknesses: And indeed any one of them able to crush us! Sickness is, in short, '*Flagellum Dei pro peccatis Mundi.*'" He considered "one-third of all diseases Chronical, those in men being called splenetic, in women Hysterical." For a cure of these he advises "serious piety." Cotton Mather² had a theory that diseases were caused by minute parasites in the air, too small to be seen, a kind of insect or worm; he hoped that some kind of a vermifuge would be found to kill these creatures. He was a philosopher but not a scientist, although he had spent two years studying medicine. He is quoted as thanking the Lord that the unhappy aborigines had largely been exterminated by some great plague (probably smallpox); but the Yankees died of colds and coughs notwithstanding their doctors.

Few names have come to light of women who practiced medicine or obstetrics in New England before the eighteenth century. Those that did were obliged to ride horseback through miles of forest to superintend the births of the babies, incidentally doing what medical work was necessary. One, Ann Moore, announced that she was a disciple of Galen and Paracelsus. A Mrs. Beggarly advertised her costly unicorn's horn as her sovereign remedy. But, as there was only one unicorn's horn, and perhaps only one bezoar stone, in New England, doctors in general had to manage their cases with more mundane remedies.³

¹ See Thayer, *Johns Hopkins Hospital Bull.*, Sept. 1905.

² Cotton Mather wrote and published no less than 382 works, of which "*The Magnalia Christi Americana*", an ecclesiastical history of New England, contains an account of witchcraft.

³ Dexter, E. A., "Colonial Women of Affairs," (before 1776) pp. 58-77.

Steiner¹ tells us something about the medicines of Governor Winthrop of Connecticut. Samuel Stone, an assistant to the Rev. Thomas Hooker, writes to him for advice as to his sick baby, twenty-three weeks old. He says that the child is jaundiced, coughing, and altogether wretched, and has not gained under the "barberry bark boyled with saffron in beer," prescribed by Mrs. Hooker, the minister's wife, nor with the "remedy of Lady Otway made of head lice mixed with turmeric, nutmeg, and sugar; nor with the rubila, Winthrop's own panacea, which Mrs. Haynes gave him."

As has already been noted, a physician, Dr. Samuel Fuller,² came on the *Mayflower*. He was particularly noted for his ability to make venesections. After Fuller, we are told, "there was no practitioner of note for nearly a hundred years." In 1640 a law was passed restraining quackery, although there was then very little possibility of learning any medicine except from self-made doctors. There were, however, many well-known nurses and midwives in the colonies. Judge Sewall in his diaries frequently mentions the names and privileges of the midwives and nurses who served in his own family.³ On April 1, 1677, for example, he tells us that he had to go for the midwife at 2 A. M. As they were returning as fast as possible to his house the watchman halted them, and asked their business; but when he found what it was he "bad God bless our labours, and let us pass." The following Sunday was rainy, stormy, and windy, but the same midwife, Elizabeth Weeden, "brought the infant to church . . . where, after the sermon and prayers in the afternoon, Mr. Thacher, the preacher, prayed for it. Then I named him John, and Mr. Thacher baptised him." This was Judge Sewall's first child, and to carry a baby to its christening was one of the duties of the midwife. In the case of a little dead baby of Judge Sewall, at another time, she also had the privilege of carrying its corpse in her arms to the grave.

In passing, it may be mentioned that this Reverend Thomas Thacher (1620-1678) was a much beloved preacher and pastor at the old South Church in Boston for many years. He was also a great classical scholar and an apothecary and barber; that was the best Boston had in those pioneer days.⁴

¹ Steiner, Walter R., "Governor John Winthrop Jr. of Connecticut," *Johns Hopkins Hospital Bull.*, 1906, 359.

² Viets, Henry R., *op. cit.*

³ See the "Diaries of Judge Sewall," vol. I, p. 40.

⁴ Thacher, James, "Medical Biographies from the Earliest Settlements in the New World to the Date of Writing", 1828.

We have mentioned the midwife wife of Dr. Fuller. She travelled about with him whenever he made a journey to the suburbs, "to lett some twenty people blood." She was evidently an educated midwife, for we find that Benjamin Eaton, aged eight years, was "put to Bridget Fuller to be educated."¹ In 1657 the town of Rehoboth invited her to "come and dwell among us, to attend on the office of midwife, and to answer the town's necessity, which at present is great." But she felt too old to undertake such new and strenuous work as this. She died a year or two later.

The second midwife in New England was Anne Hutchinson of Boston (Dexter, p. 60) who was in the business of attending confinements before she became a spiritual healer. She was born in England about 1600, being a cousin of the poet, Dryden. In 1637 Winthrop became alarmed because she was holding two weekly meetings in her house at which remarks derogatory to the regular ministers were sometimes made, and it was decided to banish her from the state. She went to Rhode Island, where her family founded Portsmouth, now Newport. After the death of her husband she again moved to New Rochelle, N. Y., only to be massacred there, with her younger children, in 1643.

Mrs. Ann Eliot, wife of the Apostle to the Indians, was said to have been as good a doctor as any man in the Colonies. The town of Roxbury erected a monument to her memory in 1687, inscribed with this legend, "She was thus honored for the great service she hath done this town." An old Mrs. Wiat, who died in Dorchester in 1705 at the age of 94, was also deservedly given a laudatory epitaph by the town she served. It ended, "She assisted at ye births of one thousand, one hundred and odd children." Similarly an epitaph at Marlboro, Vermont, to a Mrs. Whitmore reads, "She officiated at more than two thousand births and never lost a patient"; and a Mrs. Thomas, of Marlboro, was said to have traveled up to her 87th year on horseback or snowshoes through hundreds of miles of forests and river valleys, playing the part of stork, and caring for the mothers and babies.

Packard (op. cit. vol. I, p. 49) mentions a Ruth Barnaby of Boston as having been a midwife for over forty years, dying in 1765 at the age of 101. One year before her death she insisted upon being vaccinated against smallpox. Packard also says that a Sarah Alcock was "skilful in physic and chirurgery." She died in 1665. (vol. I, p. 50) At

¹ Ames, "The Mayflower and her Log". See article by Thomas F. Harrington, *Johns Hopkins Hospital Bull.*, Oct. 1903.

Nantucket one Margaret Barnard was very popular, both as midwife and doctor, and received, for those days, large fees for her services. The Rev. Timothy White is recorded to have paid her "five pounds one shilling and sixpence for tending his family, besides two shillings for medicine." Packard (p. 49) also quotes the following epitaph of an eighteenth century woman doctor (born in 1685), from the Phipps Street burying ground at Charlestown, Massachusetts:

Here lyes interred ye Body of
Mrs. Elizabeth Phillips, Wife
to Eleazer Phillips, Who
was Born in Westminster, In Great
Britain, & Commission'd by John
Lord, Bishop of London, in ye Year
1718 to ye Office of a Midwife; & came
to this Country, in ye Year 1719, & by
ye Blessing of God, has brought into
this World above 3000 Children;
Died May 6th, 1761, Aged 76 Years.

John Fiske¹ writes of Margaret Jones of Charlestown. She had very sensible ideas of medicine and herbs to be used as tonics, and was one of the earliest New England midwives. Unfortunately, however, she incurred the enmity of certain ministers and so-called doctors, was accused of witchcraft, and hanged in 1648. Governor Winthrop approved of this hanging, "especially because a violent storm was sent by the Lord at the moment of her execution." Hers was the first witch trial in the colonies, but by no means the only one. By 1692 religious fanaticism in New England was at its height; and over one hundred persons at a time were in jail for witchcraft; most of them were condemned to the gallows, but never burned. Evidently this witchcraft mania was then almost universal. Even Cotton Mather believed in the incarnation of the devil; although he earnestly tested several cases of "possession," and found the accused victims of temporary insanity and so saved them from the gallows. After 1693 there was a revolt against these delusions and hangings, and all the prisoners in Salem, at least, were set free, much against the will of Rev. Nicholas Noyes, who was a great heresy hunter. On one occasion, confronting a brave woman about to be killed, he said that no prayers were to be made for her, and pointing his finger at her he shouted, "You are a witch." Her quick reply was, "You are a liar." It seems pitiful to think that this land of pioneers seeking freedom had as bad a record, proportionately, as

¹ Fiske, John, "New France and New England", 1902, p. 145.

the countries from which they had come. Especially is it sad because so many of the alleged witches were midwives, and their deaths deprived the mothers and children of their towns of such care as they alone could give. In 1659 one Zerobabel Endicott of Salem was acting as a man-midwife to obstetric patients. His chief aid to a woman in labor was the following prescription: "Take a lock of Vergin's Haire on any part of the head, cut it into powder, add 12 dried ant's eggs, give them with a half cup of red cow's milk, or in ale worts." But in 1675 we find that a Captain Raynes of Maine was presented in court "for presuming to act the part of midwife," and was fined fifty shillings. History fails to tell us who took his place.

The medical abilities of the first governor of the Connecticut Colony, John Winthrop¹ (from 1659 to 1676), and his favorite prescription, "*Rubila*", have already been mentioned. He gave it for every complaint, but long kept its ingredients secret. It developed that it was composed of tartar emetic and nitre. He also used iron, sulphur, calomel, jalap, rhubarb, mithridate, powdered coral, electuary of millipedes, unicorn's horn, wormwood, anise, as well as the weapon salve of Sir Kenelm Digby. Winthrop was a great traveler before coming to the New World in 1631; even then he was by no means ready to settle down, moving from Ipswich to Salem, to Fisher's Island, New Haven, Hartford, and New London. In the meantime his sister-in-law, the widow of Henry Winthrop, was "much employed in her Surgurye," and, he adds, "she hath very good successe." In his early practice Winthrop himself was quite willing to use remedies prepared by women, such as "some yellow and black plasters given me by a woman that is very skilful and much sought unto for these things." Evidently, he and the Reverend Thomas Thacher were what Cotton Mather described as "angelic conjunctions of divinity and medicine." Like the "tar water" of Bishop Berkeley, at a later date, Winthrop's remedies were sometimes curative and at least seldom harmful.

We know the names of a few of the medical women of Connecticut of those days. There was a Jane Hawkins who, in 1638, for some reason, probably witchcraft or "notorious familiarity with the devil," was ordered not to meddle in surgery, or "physick", "plaisters", "oyles", or matters of religion, and to leave the country within three months.²

¹ Steiner, Walter R., "Governor John Winthrop, Jr. of Connecticut, as a Physician," *Johns Hopkins Hospital Bull.*, 1903, p. 295. See also Winthrop, R. C., "Life and Letters of John Winthrop", 1867, vol. 2, p. 76.

² Bolton, H. Carrington, "The Early Practice of Medicine by Women," 1881.

Torrington employed two midwives, a Mrs. Jacob Johnson and a Mrs. Huldah Beach. Packard tells us¹ that in all the early settlements the midwife occupied a most important post. Families were large, each having from five to twenty-six children. As one went south midwives were in less danger of accusations for heresy and witchcraft; nevertheless the birth of a dead baby or of a monstrosity was likely to lead to considerable unpleasantness.²

When the early settlers left their homes in England, some of them, doubtless, hoped to reach the further shore of the Atlantic before the birth of an expected baby. When two boats sailed at the same time it was also hoped that a midwife would be a passenger on one of them, as was actually the case on the *Arabella* and *Jewel*. By 1635 there were three such useful midwives in the New Haven Colony, the Widow Potter, Widow Bradley, and Goodwife Beecher. Because the Widow Bradley "hath been especially helptul to the farms and doth not refuse when called to it," the town voted to give her a house and home lot, rent free, just as they gave a house and lot to one of the men doctors to induce him to lengthen his stay among them. In his saddle bags, and probably in those of the women doctors, there was "Syrup of Violette, Sirrup of Roses, Spirits of Mint, Spirits of Annis, Mrs. Beggarly's unicorn Horne and a Beza stone"; they must have had, also, a goodly supply of calomel and opium powder, cathartics, a lancet, tooth forceps, and needles and thread. Dr. Herbert Thoms³ assures us that these medical women were called upon to treat other conditions than childbirth. With their little perforated tin candle-lanterns they rode off into the darkness to make their calls, forded streams, crossed rickety bridges, and frequently lost their way in the woods. They had little to fear from the Indians, because nine-tenths of those in southern Connecticut had died of smallpox, yellow fever, and intermittent fever, for which Cotton Mather gave praise.

From the old records of New London, Connecticut, comes the following interesting account of such a seventeenth century woman doctor who was actually called "doctress": "Doctress Joanna Smith,

¹ Packard, Francis R., "History of Medicine in the United States", 1931, vol. I, pp. 43-54.

² Steiner, Walter R., "A Contribution to the History of Medicine in the Province of Maryland, 1636-1671". *Johns Hopkins Hospital Bull.*, 1902, p. 194.

³ Thoms, Dr. Herbert, "The Beginnings of Medical Practice in the New Haven Colony," in the volume on the Celebration of the Second Centenary of the founding of the New Haven County Medical Society, 1934.

1614-1687, was skilful with wounds and bruises, as well as to nurse and tend the sick." She also "made salves and tonics," and besides, "she was a midwife whose services were always in demand." Her husband was John Smith, a lover of shade trees; in his will he gave the town the two trees that stood before his house, on condition that they should "not be cut down by any person." This is an unusual sidelight on a house of well-to-do Puritans in those early days.

This Doctress Smith had come across the ocean with a good knowledge of the medical practice of her time, learned from her relatives in England. What she had not learned from them she could supply from intuition and common sense, for medicine was an art, not a science, in the seventeenth century. Joanna was a cousin of Lucretia Brewster, and a relative by marriage of the noted Anne Hutchinson, and like them she was "ready of wit and a good spirit." Whether "under a covenant of grace" we are not told, but Joanna and Lucretia were probably more pacific than Anne. Lacking the preaching habit, they had more time for their patients and for long rides into the woods to treat them with salves and tonics, heal their wounds and bruises, and manage difficult midwifery. These early doctresses earned a good deal of money, although their home-made or imported remedies were expensive, but it is seldom that we find patients grumbling at the cost of their sickness, while it was no uncommon thing for a town to pay a good price for the stock in trade of a deceased doctor. Joanna Smith died in 1687, at the age of seventy-three, and that was considered very old for those days. She was buried in New London. Lucretia died in 1679, and is buried in the family lot in Brewster Neck.

In New York, or rather Manhattan, from 1638 to 1661, Annetje Jansen, who then owned what is now a large part of New York City area, was a famous Dutch midwife. It is thought that she came to Manhattan because her daughter Sarah was the wife of a Dr. Kierstedt who was practicing there. (Packard, p. 51.)

In Philadelphia, Packard found (p. 49) an "Elegy on the Death of the Ancient, Venerable, and Useful Matron and Midwife, Mrs. Mary Broadwell, who rested from her labours, Jan. 2, 1730, aged 100 years and one day."

There seem to have been no men-midwives in Maryland. In 1651 there was a Mary Clocker, who delivered Susannah Warren of a "dead child which had no imperfections." Dr. Waldron, who was called in as a consultant, thought it had been dead three weeks; but Mrs. Clocker

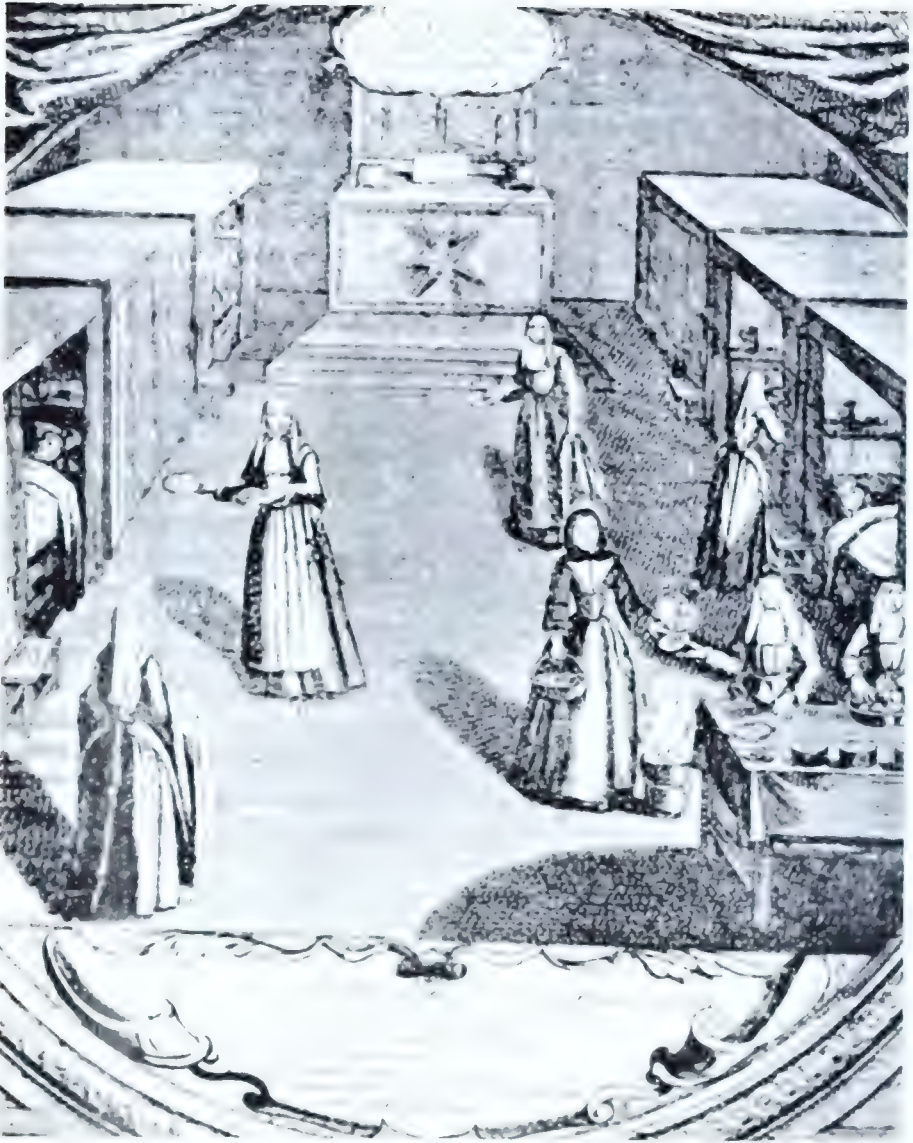
stoutly held that, since its skin was free from boils or blotches or any disease and had only one small place on the stomach where the skin was broken, it could not have been dead long. How the controversy ended is not stated. There is also on record a legal case in which a Mrs. Johnson and Rose Smith, midwives, "had received into the world a man child about three months old," "all bruised on one side where the mother had been beaten with a pair of tongs."¹

In Maryland in 1656 it is amusing to find several recorded prosecutions of doctors for overcharging their patients, and also actions for slander and malpractice. Doctors' bills were then frequently paid in tobacco or hemp. A man named Thomas Hebden is recorded as selling drugs and coffins! And his wife Katherine was a doctor. She sold physick to Richard Lawrence for which she was paid nineteen hundred pounds of tobacco. Later she "did chirurgery upon the legg of John Greenwell . . . and did diet him for seven weeks or thereabouts." In 1651 she demanded "fourteen pounds of tobacco for a cask of physick from Geo. Manner's estate." One of her remedies was the ever popular mithridate, containing at that time twenty ingredients.

Separated as they were by the breadth of the continent Canada and Mexico have had medical histories very different both from each other and from the United States colonies intervening. In Canada, developing mainly from settlements along the St. Lawrence River, French medicine prevailed. In Mexico, settled by Spaniards among the Aztecs, there was a wide variety of Indian as well as mediaeval Spanish ideas of disease and its treatment. In the City of Mexico the invaders soon built a coeducational medical school and hospitals as beautiful as any in Spain. This old hospital of Cortez succumbed to modern street wideners in 1934, after three hundred years of service. In the meantime, medical education in Mexico had deteriorated. Indian hocus-pocus and inefficient remedies, fortune telling by kernels of maize thrown on a white cloth, the exorcism of demons by Chinese methods, and Aztec medical instruments had taken the place of the best methods of the early Spaniards, poor though these now seem to us. Women had been relegated to the puppet places they held in the Middle Ages, a bondage from which they are finding it difficult even yet to free themselves.

Before the birth of a Mexican baby the prospective mother was

¹ Juries of women were sometimes appointed to examine a woman for pregnancy. In 1656 eleven women were ordered to search Judith Catchpole to see if she had recently had a baby which she was accused of murdering. Another jury of women "found Elizabeth Robins with child."



NOBLE LADIES AND NUNS AT THE HÔTEL DIEU, PARIS.

*(From Notting and Dock: "A History of Nursing," Putnam, 1907.
By permission)*

given a sweat bath and various teas. Wounds were sewn with human hair, and washed with agave juice; and the sharp point of the agave leaf was used as a probe in any opening, an incision having first been made with an obsidian knife. There is authority for the statement that women studied with men at the early university in Mexico and at the hospital established by Cortez in 1524. Even in Aztec days there had been hospitals under the care of women throughout the country; and Indian medicine seems to have dominated the treatment of disease for centuries after the coming of the Spaniards.

Canada, on the other hand, never used Indian medicine. Mlle. Jeanne Mance (1606-1673) migrated to Quebec in 1641, where, three years later, she opened a hospital, the second in America.¹ There was for several years no physician there to prescribe for sick Indians or French immigrants, soldiers and priests. Mlle. Mance used great common sense, together with some knowledge of medicine, and treated her patients as well as she knew how. Somewhat later a trained botanist named Sarrazin (from whom we get the name of the family of the pitcher plant, the *Sarracenia*) who had studied medicine, settled in Quebec, practicing for charity; and he was of great help in the hospital. Mlle. Mance returned to France for funds and for nurses, and three Sisters, among them Judith de Brésoles, of Blois, were sent out. This Judith, as Mère de Brésoles, spent the rest of her life in Montreal, "serving the sick," raising herbs for their medicine, and getting funds to carry it along through epidemics and wars. Jeanne died at her hospital in 1673. Later Marguerite Bourgeois, a niece of Richelieu, established another hospital near that of Jeanne.

V. THE SEVENTEENTH CENTURY—MEDICAL WOMEN IN FRANCE

AS to the hospitals and doctors in France in this seventeenth century we find conflicting opinions. Franklin tells us² that there was tremendous overcrowding in the hospitals, especially at the Hôtel Dieu in Paris, where in one ward there were 272 patients in 78 wide and 33 narrow beds, and through this ward there was continual passing to and

¹ Nutting and Dock, "A History of Nursing", vol. I, p. 389 ff. There are many quotations from Francis Parkman, "The Jesuits in North America", vol. II, p. 85 ff.

² Franklin, Alfred, "*La Vie Privée d'autrefois*," 1893.

from the pantries, laundry, wood-boxes, etc. The floor was generally bloody and spotted with pus and excreta, and the odor from nearby latrines was terrible. The operating room was just beyond this ward, so that all the preparations for operations could be seen by those near the doors, and the cries of the un-anesthetized patients who were being operated upon were especially frightful to those waiting their turn. The mortality was about one in four. Besides these inconveniences and horrors, the wards were so cold in winter that the patients' noses and ears were sometimes frozen so badly that they had to be amputated then and there!

On the other hand, according to Evelyn, who visited Paris in 1644, he was surprised to find "how decently and Christianly the sick people in the Charité hospital were attended, even to delicacy . . . by noble persons, men and women." It is said that Queen Anne of Austria and Marie Thérèse, in their day, often visited hospitals masked, not only to see what was going on but to help in the care of the patients without being recognized.¹ Kavanagh and Wright tell us that Mlle. de Melun (d. 1679), a noble woman who was canoness of Mons, went about nursing the sick in homes and hospitals for twenty years. She then built a new hospital, and for thirty years more devoted her entire time from four in the morning until midnight to the treatment of the sick who came to her from miles around. We are further told that in times of plague and famine many noble women of Paris gave their lives to the care of the sick. They established orphan asylums and shelters. One such institution, the Asylum of the Good Shepherd, was founded by Madame de Combe, a Dutch woman who died in 1692. Another,² in Arras, was under the care of Jeanne Biscot, a veritable heroine of charity. She died in 1664 at the age of sixty-three. As a girl she was rich and well educated not only in languages and literature but in medicine. Wherever she found war-wounded men, or orphan children, she made them her special care. Besieged by the Germans, Arras was crowded with victims of dysentery; and no sooner was the war finished than the plague broke out. For nine months she worked untiringly to relieve suffering. Arras was a large city in those days, completely surrounded with massive walls, and almost undermined with vast wine cellars.

It was at this time that St. Vincent de Paul established the society

¹ Kavanagh, page 187, Chapter XV.

² Wright, Thomas, "Hospitals and Sisterhoods," pp. 106-115.

of visiting nurses of whom Louise Marillac (1591-1671) was one of the first leaders. She was of noble birth, well educated, and married to LeGras, the secretary of the queen, Marie de Medicis, a medical man who taught her whatever she had not previously learned of medicine and surgery. After her husband's death she vowed to devote her life to the sick, though not in a convent. She prepared medicines, and organized and instructed her helpers so that they became the first Sisters of Charity, adopting a gray dress and modest veil, visiting prisoners in the jails, slaves in the galleys, the sick in pest houses, and every other place where doctors and nurses are needed.

Madame de Sévigné (1626-1696) should be mentioned, although she was more interested in theories of disease, and the remedies used in their treatment, than in actual contact with the sick. To her type of mind the "sympathetic powder" of Sir Kenelm Digby appealed strongly. She called it "perfectly divine." In 1685, when she wrote this eulogistic statement, the powder was being used not merely on the instrument by which a wound was made, but also on the wound itself, after its edges had been drawn together. She was also a hearty advocate of the use of human urine in medicine, of viper's flesh cooked in wine, of the ground powder of the skull of a hanged man as a cure for epilepsy, and of oil of puppies and oil of spiders, snails, and worms, as applications to a gouty or rheumatic joint.

Of quite a different type was the Marquise de Sartre, the wife of D'Estoublon. She was a medical student and doctor as well as a mathematician and naturalist.¹ Burdette² tells us of a Caterina Barbousseau, who, in 1664, studied at the Hôtel Dieu in order to become a bleeder; and Harless mentions (p. 184) the Vicomtesse de Vaux, Marie Fouquet, who published a volume entitled "Remedies for all diseases, internal and external, difficult to cure, or chronic, a quantity of secrets." She also wrote on hygiene and in advocacy of milk cures. Her books were popular, and were published in Germany a few years after they had appeared in France. There was another book of medical "secrets" published by a Mlle. d'Auvergne in 1691.³

The really important work of the medical women of France during this century was in obstetrics. We have already noted that to Louise

¹ Lipinska, p. 185, quotes from Juncker, *Cent. féminin. érudit*, p. 67.

² Burdette, "History of Hospitals," vol. 3.

³ LaFontaine dedicated his *Poème du Quinquina*, (pub. in 1692), to the Duchess de Bouillon, the youngest niece of Cardinal Mazarin, who had studied medicine in Paris.

Bourgeois (1563-1638), a pupil of Ambroise Paré, is due the credit of introducing new methods of delivery and a more scientific midwifery. She was one of the first to force premature labor in the case of *placenta praevia* with hemorrhage. She says: "When a pregnant woman has too great a loss of blood the child must be manually extracted. The wife of a certain senator, six months pregnant, having shown these symptoms, I delivered her by version, and not an hour too soon. Her life was saved and the baby lived two days If I had known earlier that this would stop the hemorrhage, I could have saved the life of the Duchess of Montbazon." She was an expert in the management of version, especially podalic, and in Chapter 7 of her "*Observations*" (1609) she names twelve positions of the presenting infant and the rules for the treatment of each. Her "*Observations*" cover every stage of pregnancy, the conduct of all the abnormalities of labor, a careful drill on the anatomy of the female pelvis, the theories of sterility, abortion, moles, hydramnios, the death of the foetus, etc. Furthermore, she gives explicit directions for the necessary after care of mother and child, advice on the choice of a wet nurse, following all with an account of various unusual cases of twins, lithopaedions, etc. which she had seen in her more than two thousand births. Louise was not only an obstetrician of great skill but also a surgeon and a poet. She operated for stone, tumors, wounds—having learned surgery from her husband and Ambroise Paré—and she also wrote sonnets.¹ Having successfully confined the queen, Marie de Médicis, seven times, she dedicated her "*Observations*" to her. Marie seemed to be very fond of Madame Bourgeois, always calling her "Ma Résolue," until after the scandal following the death of the king's favorite mistress, the Duchess of Montpensier, from puerperal fever. The surgeons-in-waiting who had fastened suspicion upon her, finally exonerated Louise from all blame for this fever; but her "feelings were so lacerated" that she felt obliged to publish her

¹ Louise Bourgeois' books were frequently reprinted in France. They were also translated into German and English, Latin and Dutch, and printed in various editions by Mathaus Marian, Culpeper, and others, with and without additions or notes. The full title was: "*Observations diverses sur la stérilité, perte de fruit, fécondité, accouchements et maladies des femmes, et des enfants nouveau naiz; amplement traittés et heureusement practiquées par Louyse Bourgeois dite Boursier, sage-femme de la reine. Oeuvre util et nécessaire a toute personne.*" 1609.

See also Dr. Achille Chéreau, "*Esquisse historique sur Louise Bourgeois dite Boursier*", etc., 1852; and Lipinska, p. 242 et seq. Also article by Hunter Robb, "Remarks on the Writings of Louyse Bourgeois", *Johns Hopkins Hospital Bull.*, No. 33, 1893. Also article by Dr. R. Creutz in *Die Frau*, Berlin, July, 1930. Also Witkowski and other histories of obstetrics.

own side of the story.¹ The notoriety of this case, however, served to advertise men midwives; and her own professional work dwindled rapidly.

Later she wrote a book of advice for her daughter,² who was following in her mother's footsteps, and from this we learn still more about the methods of confinements in the seventeenth century, and about its superstitions. It seems, for instance, that relics of saints, brought into the lying-in room, were frequently invoked both by patient and *sage-femme*, such saints as Margaret and St. Germain des Prés being considered the best. There was still considerable meddling midwifery, and much traditional nonsense in the care of the patient. The midwife was supposed to stay with her royal patient for five weeks before the birth of the baby, at which critical time the family entered the room to walk up and down with the suffering mother, who might be delivered standing, kneeling, on the bed, or sometimes on the Hippocratic obstetric chair. Louise tells us that, after the birth of one of the princes, two hundred additional people crowded into the room. She was paid one thousand ducats for the birth of a boy, six hundred for a girl, besides many presents from the father of the family. The king promised her a pension for life, but this she never received after his death; although she had saved the lives of several of the royal babies who had seemed almost dead when born. Her method of resuscitation was to take the apparently lifeless body, and pour warmed wine into his mouth from her own mouth "to cut its phlegm", rubbing its body vigorously at the same time, and bathing it in warm wine and water.

As Robb says, it would have been just as well if Louise had not published her last book, "Secrets"³; for they show her to have been as full of the superstitions of her time as the commonest peasant. Her portrait, painted at the age of forty-five, shows a robust, kindly face, somewhat masculine, dressed in the usual style of rich women, with a high ruff, a handkerchief neatly placed over her hair, and a gown of ample proportions with large sleeves and a small stiff waist. It does

¹ "*Apologie contre le rapport des Médecins*".

² "*Instructions à ma fille*", 1626.

³ "*Les Secrets de Louyse Bourgeois*," 1635.

Among her "Secrets" were the following: A cure for epilepsy consisted of ground bone from the skull of a hanged man. Wild pimpernel was used for rabies, but it must be collected before sunrise. For cancer she used egg shells pounded in a mortar made of lead. The book contains 180 pages and was published "with the consent of the king." She always prayed to the Lord to help her in every case; nor did she forget to return thanks after the baby was born, if both mother and child were as well as could be expected.

not look like the face of a woman who could believe in the efficacy of such remedies as the powdered skull of a thief, or the fresh warm skin of a black goat or hare placed on the patient's abdomen or back to hasten labor, or in the use of human urine and the dung of goats and doves, or in dozens of old medications useful only as placebos, if at all. She tells her daughter quite properly to beware of lying to the patient, and not to promise more than it is humanly possible to fulfil, and especially never to perform abortions nor even to be friendly with women known to be abortionists. Also she must not take unmarried women into her own home for their delivery—in fact, she must avoid every appearance of evil. This advice may at the time have seemed particularly necessary, because a rather notorious abortionist had recently been hanged for causing the death of a young girl who had been betrayed by the duke of Vitry, although the duke had gone free. Louise also begs her daughter never to keep a caul, lest she be accused of witchcraft; and never to let her own fingers become contaminated by the secretions of a patient who has "variola" (by which probably she meant syphilis), lest she (the *sage-femme*) should infect her next patients. Louise closes with a denunciation of the young girls of her time, calling them unruly, independent, impertinent, and "wild as the beasts of the field."

Franklin¹ says that, if all midwives had been as well educated as Louise Bourgeois, and as honest and skilful, there would have been less friction between them and the doctors and surgeons; but the greed for money clouded the consciences of so many that their abortions and infanticides, their work for rich prostitutes and the deaths of many of their patients caused their condemnation. It is probable that, if the petition of the midwives in 1635 had been granted, asking that Louise Bourgeois give them a public course in obstetrics, the whole course of higher education for women in medicine might have been changed for the better; but the Paris Faculty of Medicine was too much occupied with the quarrels of doctors, barbers, and surgeons² to comply with this request of the midwives. In 1669, however, the surgeons of Paris were ordered by the Faculty to instruct midwives and prepare them for an examination, which, if they passed, might enable them to become *agrégées*, or associates, of the surgeons, an honor which they would

¹ "*La Vie Privée d'Autrefois*", loc. cit.

² In 1698 there was a case in the Court of Appeals at Tournai against Marie Jeanne d'Assonville, a licensed practitioner, to annul her license to make, sell, or prescribe a certain ointment for hemorrhoids. The surgeons argued that they alone had the privilege of making and applying ointments. But they lost their case.

share with the bone-setters, bleeders, lithotomists, herniotomists, dentists and oculists. The term of study called for was short (three months at the Hôtel Dieu), or three years' apprenticeship to a reputable midwife could be substituted for the hospital training.

One of the best private pupils of Louise Bourgeois was Marguerite du Tertre de la Marche, the "superior midwife" at the Hôtel Dieu for many years. It was she who finally reorganized the training of midwives, gave them a three months' course, and insisted on their learning how to manage a case without the help of a surgeon. In 1667, she wrote a book of questions and answers for her pupils to use in all emergencies. This book¹ was enlarged in the following century by one of her pupils, Louise Leboursier du Coudray,² possibly a granddaughter of Louise Bourgeois, and used for many years as a text-book for the education of midwives.

VI. THE SEVENTEENTH CENTURY—MEDICAL WOMEN IN GERMANY

IN Germany medical women and midwives in the seventeenth century were even more numerous than in other countries despite the fact that no university was open to them, and that, from 1618 to 1648, Germany was in the throes of the Thirty Years' War, from which it took the country a generation to recover. Meanwhile education languished; men had little heart or money for the upbuilding of either old or new universities, or for the promotion of the education of girls. Many women of the nobility, however, were able to get instruction from private tutors too old to fight; and, with their natural feminine instinct for nursing, they treated the sick or wounded. Naturally also when food was scarce, intelligent women studied diets and the appetizing preparation of cheap foods, and some of them published books of such recipes. Harless (pp. 154 ff.) gives us the names of scores of such women.

Among those of royal blood should be mentioned Anna, wife of Duke

¹ Its full title was: "*Instruction familière et très facile, faite par Questions et Réponses, touchante toutes les choses principales, qu'une Sage femme doit scavoir, etc. Composée par Marquer. du Tertre, Veuve du Sieur de la Marche, Maitresse jurée Sage-femme de la ville de Paris, Hotel Dieu, etc.*" Paris, 1677.

² Mme. Leboursier du Coudray was the pioneer in introducing a manikin for the teaching of obstetrics. Her book was first published in 1759. (Lipinska, pp. 270-1). Scoutetten tells us that it was this Louise whose plans for the new *Maternité* in Paris were adopted, she being its first director and instructor, along with Baudeloque.

Albrecht von Preussen (b. 1550); Elizabeth, a Princess of Brandenburg (b. 1550); Christina of Hesse (1578-1658), wife of a count of Saxony, who was famous as a mathematician and scientist; Anna Sophia of Hesse, abbess of Quedlinburg, a famous botanist, whose book on natural history was published in 1685; another naturalist, Wilhelmina Hedwig, Princess of Hessen Philippsthal (b. 1681); Johannetta, Countess of Sayn and Wittgenstein¹; Erdmuthe Sophie, Princess of Saxony (1644-1675); and Claudia Felicitas, wife of the Emperor Leopold I; and Sophia Elizabeth, wife of Duke August of Braunschweig; Catherine Ursula, Countess of Baden; and Elizabeth (1618-1680), daughter of the King of Bohemia. This last princess was said to have been a miracle of learning, not only in languages but in natural history, philosophy and medicine. She was later for many years abbess of the Prussian Monastery of Hereford, England, where she died. During her life she was called "*Die gelehrte Domina*"; and according to her epitaph she was possessed of every virtue, all learning, and had attained immortality even before her death.

Most noted, however, of all these medical women of noble lineage was Eleanora, Duchess of Troppau and Jägerndorf, who did her best work in the early seventeenth century. She published several books on medicine, the first of which was called "*VI Bücher auserlesener Artzneyen und Kunststücke fast für alle des menschlichen Leibes, Gebrechen und Krankheiten.*" It was published in 1600, 1613 and 1618; and reprinted a hundred years later with a somewhat different title.² These "Six books" on medicine made up a volume of sixteen hundred pages, which had an enormous sale. Indeed some of the author's prescriptions are still in use. Among them, for instance, is the salve of the Queen of Hungary for boils and abscesses. This was made of blackberry leaves, rosemary, and thirty other ingredients, mixed thoroughly with butter. She says that if a man who has had a bruise even as long as a year eats some of this salve, the size of a hazel nut, the soreness will leave his body. It may also be spread upon a cloth, and used as a plaster. "*Probatum,*"

¹ Pasch, Johann, "*Gynaecium Doctum, sive Dissertatio . . . von Gelehrten Frauenzimmern*, 1702. Paschius, in his doctoral thesis, 1686, discussed the question of the great and learned women of all ages. He enumerated more than two hundred whose works can still be consulted, or about whom eminent writers have recorded notes and given praise. This work has been a quarry from which later writers have dug many bits.

² This book was published in Nuremberg in 1723, and in Leipzig, 1709, under the title: "*Aufgesprungener Granatapfel des christl. Samariters, oder eröffnete Geheimnisse vieler fortreflichen Arzneimittel, nebst einer Diaet und Kochbuch für Kranke*", etc.

says she. Another prescription is a salve for a cough: take six pounds of butter and the chopped meat of a hen mixed with several kinds of cabbage. A "bit, the size of a nut, eaten night and morning, will cure the cough." On p. 213 she begins an enumeration of remedies to cure a vaginal discharge. One of these is wear a napkin soaked in brandy, another is a tampon covered with oil of lilies mixed with capon meat and beer, to be inserted into the vagina. To start a delayed period a woman must keep in the open air, eat much nourishing food, be bled from the right foot and left arm at the elbow, every day for eight days, a cupful of blood to be taken each time. She is also to drink hot wine containing pomegranates. The Duchess admits that sometimes a pregnant woman needs God's help to prevent a miscarriage. She also should wear a piece of lapis lazuli on her neck, a gem between her breasts, and take a tea of corals, pearls, emeralds, and amethysts, boiled with rose leaves, coriander, fennel, etc. Among her obstetric notes is this: "When the removal of the placenta is delayed, a freshly killed hare is to be split open and bound to the abdomen of the patient. . . . soon, with God's help, it will come away." Swallow nest soup was one drink that would hasten labor.

On the whole this seventeenth century book of the Duchess of Troppau is no better than, if as good as, Trotula's book written six hundred years earlier. It is a sort of *omnium gatherum* of old wives' recipes, handed down from generation to generation, all used without reason, and many of them costing undue money and time for preparation. Their psychic effect, plus a "volume of hot liquid and God's help" was in some cases perhaps slightly curative. Not only the Duchess, but each of these royal women was believed by her contemporaries to be remarkable for considerable knowledge of medicine and surgery. Evidently it was considered "correct" for royalty to study medicine and to practice it in time of need. Some of them also wrote books; but in the course of time, most of them have found oblivion.

Of Swiss women who practiced medicine and surgery in the early seventeenth century Marie Colinet, the wife of Fabricius Hildanus, has already been mentioned. She set an example of conscientiousness in midwifery which her successors in Germany followed carefully. Among them Harless (p. 165, ff.) gives us the names of Veronica Iberin and her book on midwifery, Elizabeth Margareta Keil (d. 1699) who also wrote a text-book for midwives, and Anna Elizabeth von Horenburg, of Wolfenbüttel, who was state midwife of Braunschweig in the last

quarter of the century. She also wrote a book for midwives, which was long used as a text-book in northern Germany, while that of Barbara Weintraub of Augsburg, published in 1603, was used in the south.

During this seventeenth century some medical women, like some men, specialized in entomology and botany. Among them was Maria Sibylla Merian (1647-1717), who was the Fabre of her time. The daughter of a physician-naturalist of Frankfurt am Main, who taught her to watch moths and bees, dissect them, and copy them with her paints and engraving tools, she married an artist named Graf. They had two daughters, both of whom were given a medical education. In 1679 they published an illustrated book on insect life, but in 1680 the women of the family were converted to a new form of religion, because of which they left their husband and father and went to live celibate lives in Holland. Here they found abundant opportunity for extending their studies in natural history. They next went to India and Surinam to study tropical insects, and on their return published a new and enlarged edition of their original book, with copperplate engravings in color from their own paintings. Another of their books, illustrated with 60 plates, had the title "*De generatione et metamorphosi insectorum Surinamensium*", published in folio in 1705. Another such naturalist was Esther Barbara von Sandrart (1651-1729), who lived in Nuremberg, where she also taught and wrote and illustrated her books. Marie Cunitz of Silesia (d. 1664) was another who "*beschäftigte sich viel und gerne mit der Arzneykunde*." She was the daughter of a doctor, and married one, Elias von Loben. Harless remarks that she understood the study of the heavenly home better than the care of her own, for she turned day into night and wrote a great astronomical work which she called "*Urania Propitia*".

Harless (p. 173) also mentions Maria Meurdrac, from the Rhine country, who published a book on chemistry in 1689; and Margaret Sibylla von Löser, who lived in Dresden toward the end of the century, who, though she died at thirty, was already "celebrated for her learning in all the four faculties." It was said that she "studied all medical authors with zeal." There was also Christina Regina Hellwig, of Saxony, who was not only an eager medical student but a poet, musician, and pharmacist; Helena Sibylla Moeller, of Altdorf, a naturalist, honored by the Italian Academy of Scientists; Anna Wecker of Prague, and Eleonora von Tschirnhausen, outstanding scholars. Marie Sophie Conring Schellhammer, daughter of the historian Hermann Conring

of Helmstadt, and wife of a medical professor at Jena and Kiel, was noted for her knowledge of languages, sciences, and theology. Her chief interest, however, was diets for the sick and the chemistry of foods. She published an excellent book on this subject in 1697.

Justina Dietrich,¹ a Silesian midwife, born about 1645, deserves more than passing mention. Her father, pastor in Rohnstock, died when the child was four and her education was scanty. At nineteen she married a master of horse named Siegmund,² and after two years, thinking she was pregnant and about to be in labor, she sent for one midwife after another, four in all, each of whom declared she had labor pains. Finally the wife of a soldier examined her, and denied that she was in labor, or was even pregnant. This proved to be correct; and, after she had recovered her poise, she began to investigate the anatomy and physiology of the female sex organs. In 1672, she obtained a copy of De Graaf's book on generation, which started her on her career as a really scientific midwife. For twelve years she practiced among the poor peasants of her region, teaching other midwives, and finally acting as chief consultant. In due time she had several cases among women of the upper classes, and being successful was appointed "Stadt Wehmutter" in Liegnitz. Shortly after this, she was appointed midwife to the royal family of Prussia, and to the family of the Kurfürst of Brandenburg, and in 1688 she was called to Berlin to attend the wife of Frederick I of Prussia. In 1689, still in Berlin, she published her first text-book for midwives, in the form of a dialogue between herself and a pupil named Christina. She had made it a habit to take notes of all her cases, and to draw diagrams of the presentations of the babies. With these, and sketches from other books, she illustrated her own book freely, so that, if a pupil studied the text carefully and saw good examples "*in vivo*," she could not fail to profit by them. To give nature an opportunity to terminate labor without interference was one of Frau Siegmund's mottoes. Another was to study how to turn a badly presenting infant so that it could be born without jeopardy to the mother. Sometimes she used a noose or sling around the foot of the child in order to bring the feet down, but occasionally she had to use a blunt hook. These were her instruments. She had enemies, but her success quite effectually silenced their criticisms of her methods. Her book was six times re-

¹ "*Justine Siegmund*", by San. Rat. Dr. R. Creutz, in "*Die Frau*", Berlin, July 1930, pp. 556, etc.

² Robb, Hunter, "The Works of Justine Siegemundin, The Midwife". *Johns Hopkins Hospital Bull.*, 1894.

published, and was translated into Dutch, under an explanatory title eighty-five words long. Looking at Siegmund's strong, honest and



kindly face, under its silk and lace handkerchief hood, and reading below it the legend,

*In Gottes hilf und Seegen
Geschickten Hand bewegen
Ist all mein Tuhn gelegen,*

we feel that, as Hunter Robb has said, "such midwives were in many ways superior to the average obstetrician even of today," because of their "careful observation, conservatism in practice and sound common

sense which are as necessary now as they were in the eighteenth century."¹ She and Louise Bourgeois were undoubtedly the greatest practical obstetricians since Trotula. Semmelweis, and his discovery of the contagion of puerperal fever, cleared up the only doubts left as to the safe conduct of labor in the hands of women so skilled as they.

VII. THE SEVENTEENTH CENTURY MEDICAL WOMEN ELSEWHERE IN EUROPE

IN the seventeenth century, under the Hapsburgs, the countries of Central Europe, Austria and Hungary, were almost continually at war. There was little heart for scholarly work, and until the reign of Maria Theresa, who came to the throne in 1740, no definitely scholarly work was done at any Austrian university.

Although not an Austrian, mention should be made here of Elizabeth Weston, an Englishwoman who married Johann Leon of Prague. She was the friend and correspondent of King James I of England, and of Descartes of France; and as a naturalist, medical scientist, and poet her fame spread all over Europe. Fifty years later came another woman on whom the greatest of her compatriots leaned for advice, Claudia Felicitas (1640-1705), the wife of the Emperor Leopold I. She had studied both medicine and surgery; and in 1677, during the siege of Vienna, she worked in the hospitals as laboriously as any man. It was said of her when she died that she had visited every hospital in Austria, had been consulted by the best doctors in every hospital, and knew every remedy of her time. Unfortunately, she left no account of her work.

Toward the end of the seventeenth century certain Dutch portrait painters developed a distinct genre of medical and surgical scenes. Among the "Schools of Anatomy" by various artists there is one of Frederik

¹ Frau Siegmund dedicated her midwifery book to the Princess Sophia Charlotte and the Kurfürst of Brandenburg, and to King Leopold and the Duke of Saxony. She tells us how God called her to this work and how diligently she studied medicine with an experienced physician. It is not necessary, she says, to have had a child in order to understand the mechanism of labor any more than to have had broken bones in order to understand how to set bones. Her husband was a clerk in the office of a tax collector, so she was not obliged to work, but did so "for the glory of God."

Her book has 259 pages and between forty and fifty plates, showing besides the different positions of the foetus, the birth-stool, a properly prepared bed, and her hooks and snares. Its index is excellent, a rare thing in books of this period. The study of anatomy was to her the *sine qua non* of an obstetrician; and cleanliness came next, especially clean hands and towels.

Ruysch, 1638-1731, dissecting a baby before his class of students, while his daughter Rachel looks on as unconcernedly as does the articulated skeleton of a child which she fondles in her arms. This little girl grew up to be a noted anatomist, working as her father's assistant for many years, injecting veins and arteries. She was the first anatomical museum director among medical women, was well trained in all of the medical sciences, and a better pathologist than most of the medical men of her time. She wired the bones of all kinds of skeletons of men, women and animals, arranging them in life-like postures to catch the eye of students, or to call attention to anomalies. She made botanical gardens in which she used gall stones, and similar concretions, for rockeries. She injected fine ramifications of arteries so that they looked like ferns, for which she arranged abnormal bones as a background. This museum of hers was a great curiosity to visiting doctors, and many of them coveted it, but she sold it to Peter the Great of Russia. The museum was shipped to Saint Petersburg in 1717, but the ships' sailors drank the alcohol in which many of the pathological specimens were preserved, and threw away the tumors, aborted babies, etc. Among these specimens was a foetus which was famous for its life-like pose in a jar, where it sat wiping its eyes with a piece of omentum. This specimen was finally salvaged from the sailors, and arrived safely at its destination.

During this century the most important medical woman of the Netherlands was Anna Maria Von Schurmann who was born in 1607 at Cologne. Given a good education by her parents, she was graduated in law from the university of Utrecht, where she became a teacher of philology, philosophy, and history. She studied medicine to find the cure for diseases of the eye and blindness, for she had been told that the only beneficial treatment known was the application of the clay and spittle which Christ had directed. Unfortunately, she tells us, she found no remedy more useful than that age-old one. She spoke fourteen languages; and was so learned that she read, and even wrote, books on medicine in Arabic, Latin, and Hebrew. Whenever she had opportunity she tended the sick at their homes or in the hospitals. She was also an artist, a poet, very religious, and so strong an advocate for woman's rights that her Latin thesis in 1648 demonstrates that intelligence is not a matter of sex. Lipinska (p. 303) says that she frequently wrote articles in defense of her sex and for "their elevation"; Mlle. Schurmann never married—perhaps the men were afraid of her. Her portrait by Lievers hangs in the National Gallery. She died in 1678.

In the seventeenth century the Italian universities were not patronized as much by women as they had been. Harless notes but half a dozen Italian women who studied at them. Whether this falling off was due to war-weariness, or to inertia from disease, or to the avowed disapproval of women students by the Church, or from individual fear of accusations of witchcraft or heresy, is not clear. It is safe to assume, however, that the good "sisters of charity" still occupied themselves with midwifery and the care of orphan babies.

Harless (p. 163 ff.) does mention specifically Eleanora, the Duchess of Mantua, the wife of the Emperor Ferdinand III. She had studied medicine and obstetrics at the lying-in hospital in Vienna, which was then giving courses to midwives, and became an expert *accoucheuse*. Also the Countess Carpegna of Rome, learned in philosophy, natural history and medicine, especially as a diagnostician, and a student of medical history. Nichola Salvaggia of Siena, and Margareta Sarrochi of Naples, graduates of the medical school at Padua, should be mentioned. Also, and most famous of all, the "doctoresa" Ellena Lucretia Cornero (1646-1684), a linguist and scientist known and admired all over Europe. Ellena was a native of Venice, a Magistra of Liberal Arts at Padua, and after 1678 a teacher there. Whenever she taught it is said that "all the scholars of Rome and Siena sat at her feet." She lectured on medicine and mathematics. A work in three volumes by her on the above subjects was published in 1688. Almost surely there are other books by Italian medical women, now unknown, still to be found.¹

In Spain, during the seventeenth century, although women studied at the Spanish universities, it was only by special dispensation. For all that many women of the aristocracy spoke four or five languages, studied the sciences and were fond of philosophy. Anne de Castra in 1629 published a book on philosophy which was apparently approved by the king, Philip III. (Lipinska, p. 159.) Many Spanish women were educated in monasteries where they studied what they pleased. One such student, Lancelotti Perillo, but better known by her pseudonym, Teresa

¹ The founder of the Ursulines, Angela Merici, should not be omitted. She lived at Descenzano on Lago di Garda, where she had been a teacher of little girls. The people of Brescia heard of her work, and invited her to form classes in their town. This humble beginning developed into a general charity organization under the Jesuits, which spread all over the world. It would be impossible to estimate the amount of good done by these Jesuit sisters in nursing and caring for the sick, although their work was more religious and literary than medical.

Spagnuola, specialized in medicinal botany. In 1677 she published a "*Giardino di vaghi fiori medicinali & altre curiosita*," containing prescriptions for all known diseases, and similar in style and content to the "Secrets" and "Mirrors" of other countries.

One Spanish woman of this century, though not a doctor herself, introduced to mankind one of its greatest remedies. The Countess of Chinchon, wife of the Spanish viceroy to Peru, being in 1638 sick with malaria, was cured by the bark of a tree "from across the mountains." Her cure seemed to her so wonderful, that she brought a quantity of this bark back with her to Spain, where malaria was endemic, especially along the banks of the Tagus. Later, through Cardinal Lugo, some of this bark was taken to Rome where the tertian and quartan fevers had always been common. "Peruvian bark" had been freely used in South America by Jesuit missionaries for many years, being for this reason called at first "Jesuit powder"; but a hundred years later Linnaeus named it for the countess, "Cinchona bark". (Lipinska, pp. 159-160).¹

In Portugal we find a book written for women in 1662 by a man named Roderiques de Castro, a Portuguese Jew who lived in Hamburg most of his life. His book, in four volumes, called "*Universa Muliebrium Morborum Medicina*" is said to give a good idea of the condition of obstetrics in his country at the time.

During the reign of the famous king, Gustavus Adolphus, education in Sweden was so systematically enforced that in 1637—a year after the founding of Harvard College—it was boasted that not a peasant child could be found there who could not read and write. His daughter, Christina (1626-1689) was one of the most remarkable women of the age. She had what historians call a "man's mind." There was no branch of learning that did not interest her. Astronomy, cosmography, geology and chemistry she studied with zeal. She knew Descartes and Conring personally, and studied physics and history with them. She

¹ Oliver Wendell Holmes pointed out that medicine owes much to the laity and to tradition. It was a monk who first showed the medicinal uses of antimony. A lay woman introduced the Jesuit bark given her by a priest in Peru. Sea captains taught the need of fresh fruit in avoiding scurvy; and Jenner, in the 18th century, learned from a farmer how to vaccinate human beings against smallpox. Lobelia, once commonly used to quiet nervous old women and children, was a remedy of the American Indians. In fact most of our remedies have come from empirics, and even yet we have few specifics which were not known to Hippocrates. If human beings were machines they might indeed wear out, but at least appropriate lubricants would be found for their creaking joints and valves.

read all the Latin classics. Finally she decided to devote herself to research as to the effect of various chemicals on the human body in curing disease. She invited to her Court as teachers many of the learned men and women of Europe, and exercised considerable influence on the higher education of women in other countries than her own. But, as she refused to marry, ran her country heavily into debt, besides becoming a convert to Roman Catholicism while still ruler of a Protestant country, it seemed best for her to abdicate her throne. In 1654 she went to Rome to live and there continued her studies in medicine and chemistry, twice, however, trying to regain her kingdom. She died in Rome in 1689, poor, unknown and befriended only by the Pope. Her position and education should have been productive of great reforms in hygiene, liberalism, higher education and scientific investigations; instead her life seems to have been practically wasted. Her monument in St. Peter's at Rome celebrates her conversion; but it almost alone preserves her memory.

We have already mentioned Marie Von Hilden, née Colinet, the wife of the great surgeon, Fabricius, who was, according to her husband as well as to contemporary writers and witnesses, more expert in surgery than any men of her time. But more might well be said. She performed Caesarian sections forty times with perfect success.

She tells us in her own words how she operated on Michel Dilberger, Dec. 19, 1622. Condensed somewhat, we find that Michel had fallen over his scabbard and sustained a compound, comminuted fracture of the heads of the ninth and tenth ribs. He was in great pain, and could scarcely breathe. In the absence of her husband, a frequent occurrence, she prepared her instruments, washed the patient's chest, gave him a narcotic, opened the wound, replaced the fragments of bone carefully and wired them together, closed the incision, and then poulticed and padded and splinted the ribs, and bandaged the chest very tightly. As was the custom, she stayed with the patient for ten days, "until he was out of danger," doing the dressings as frequently as was needed. In a month he was well. Could modern surgeons have done better?

VIII. MEDICAL MEN OF THE 17TH CENTURY

A DISTORTED picture of the medical women of the century would be given did it not, as with previous periods, include something of the men who were their professional contemporaries, and often their colleagues and friends.

Several medical men in seventeenth century England became famous, chief of them William Harvey (1578-1657) and Thomas Sydenham (1624-1689). Harvey was born at Folkestone, in Kent; and went to Italy to study medicine at Padua where he spent four years as the pupil of Fabricius of Aquapendente (1537-1619), and other great teachers. He was short of stature, with bright black eyes and raven hair, rather dreamy and yet quick in anger. He was physician to James I and Charles I, and later, to the child who became Charles II. Although his diagnosis of disease was good, his treatments were not so successful. He was not in attendance upon Charles II in his last illness (1685); but we have no reason to believe that he would have disagreed with the fourteen doctors who were. It is recorded that they bled the King to the extent of thirty-four ounces, blistered his shaved head, burned the soles of his feet, gave him teas of vitriol in peony water and ipecac with about thirty-eight other ingredients. All of which reminds us of Dr. Radcliffe's saying that, when he was young he had twenty remedies for every disorder, but when he was old there were twenty diseases for which he had no remedy at all.

In physiology, however, Harvey was unquestionably years ahead of his time. Possibly, in his studies in Padua, he had learned something of the earlier work of Servetus, Matteo Colombo, and Andrea Cesalpinus, each of whom had contributed something to the study of the circulation of the blood. But, whether he did or not, Harvey was the first to assemble, investigate, and correlate all the facts previously known as to the heart and the blood vessels.

Harvey was thirty-eight years old when he first dared to lecture on the circulation of the blood. He was twelve years older before he published his great work "*De Motu Cordis et Sanguinis*" in 1628. We should not forget that the scholars of this period were very intolerant of new theories; and, as has been said, Harvey was almost ostracized by his medical friends, as well as by his patients, for his daring to oppose Galen.

It was a time when "heresy" was being actively persecuted by both Catholics and Protestants. Eighty thousand Englishmen suffered persecution during the reign of Charles II because they refused allegiance to the faith of the State; eight thousand were sent to prison for religious reasons. We can hardly blame Harvey for pocketing his "heretical" manuscript. In 1649, after the decapitation of Charles I, Harvey's house was plundered by the Cromwellians, many of his valuable papers were scattered, and he, at the age of seventy-two and a victim of the

gout, was left ignominiously to suffer.¹ He had said that he did not expect any one over forty to accept his new discoveries, but he was disappointed that the young students would not.² He stated that he had vivisected dogs and eighty other animals in his studies of comparative anatomy never once finding the "foraminulous cavities" between the two sides of the heart, which Galen had taught and the Church had accepted for centuries without verification.

Unfortunately Harvey died before Malpighi had demonstrated with his new microscope³ the "syn-anastomoses" of the capillaries or their "coniosculation" of veins and arteries. All too late the world came to see that Harvey was right in his theories. A precious little volume in the British Museum contains the original notes of his lectures, delivered in 1616. It is about four inches wide by six inches long (British Museum, Sloane Ms. 230) and contains ninety-six pages. The writing is very fine and the ink has grown pale with age. It is on p. 80 that there may be read the epoch-making announcement: "*unde d[emonstrandum est] perpetuum sanguinis motum in circulo fieri pulsu cordis.*"

Thomas Sydenham (1624-1689) was of a quite different type from Harvey, not an anatomist, but the best of the practicing physicians of London in this century. In spite of conflicting politics he took no sides and kept his position. He had a noble character, and his life was simple and quiet, being devoted to his patients; his epitaph in St. James' Church, Piccadilly, correctly describes him: "*Medicus in omne aevum nobilis.*" Although called the modern Hippocrates, Sydenham was little impressed by medical history as it had been perpetuated by generations of copyists of that "Ancient." To Sydenham the chief object in the practice of medicine was to find the cause of a disease, to make careful notes of the symptoms, and then to cure the patient. His powers of observation were really somewhat intuitional, and were cultivated to the limit; his patients and they alone were his life study. For recreation he read *Don Quixote*. When the plague was raging in London in 1665, he fled; but

¹ Harvey founded a library for the College of Physicians in London, to which he left his books. In 1656 he resigned all his offices, bequeathed his estate at Romney Marsh, Essex, to the College, and gave himself up to invalidism. His estate was valued at £20,000.

² In 1634 Harvey was appointed to examine four so-called witches from Lancashire. He obtained the help of ten midwives and seven surgeons for this examination, and they completely exonerated the women, finding nothing unusual on their bodies.

³ In 1651 Harvey published his studies on the ovum of the chick which were far in advance of his time, but without a microscope he could only see the gross anatomy.

afterwards, and before the epidemic was over, he returned, and did his best to treat as many patients as possible. He did not believe in profuse bleeding, nor did he care for the poly-pharmacy of his time. Cinchona and laudanum, careful diet and fresh air were his standbys. For eleven years before his death in 1689 he was a victim of gout, as were many of his contemporaries in those days of port wine and Madeira; and, being a voluminous notetaker, he kept notes of his gouty symptoms, and left a valuable treatise on the subject when he died. He also wrote on St. Vitus' Dance, and on the infectious diseases of children; and left as a legacy the theory that diseases represent the efforts of the body to throw off poisons, and that therefore the body should be fortified, not depleted, in these efforts. Sydenham's portrait is of a medium-sized man, dressed like the Puritans, his own long hair hanging in curls, and his lace collar well ironed.

Among the other noted medical men of the century should be mentioned Francis Glisson (1597-1677), who named the capsule of the liver, wrote on rickets, and was one of the founders of the Royal Society of Physicians and a professor of physic at Cambridge; and Sir Thomas Browne (1605-1682), who wrote his famous "*Religio Medici*" in 1643.

Besides travelling, and collecting all sorts of objects of natural history, Browne cared for a large practice, educated ten children, testified against witches, besides keeping notes of his cases and writing articles on many other topics. In the "*Religio Medici*" (one of Sir William Osler's favorite bed-time books) he tells how a fashionable doctor of his time regards his patients: "They pay well and take physick freely; after bleeding they must take a purge or two, then some cordial powders, Dulcifiers of the blood, and two or three odd things more . . . 'Tis an easier thing for a Man of Parts to be a Surgeon; do but buy a Lancet, Forceps, Saw; talk a little of Contusions, Fractures, Compress and Bandage; You'll presently by most people be thought to be an excellent Surgeon provided you dress in accordance with the profession." By dress he meant a suit of black velvet, with wide lace collar and cuffs, a full-bottomed wig, a muff, knee-breeches and a gold or silver-headed cane.

Rubens has left a portrait of another famous seventeenth century medical man, Sir Theodore Turquet de Mayerne, one of the physicians of Anne Finch Conway. He had a jolly, fat, florid face, bright blue eyes, a long white beard; and he also wore his own long hair well curled, rather than a wig. Mayerne was responsible for introducing enormous

doses of calomel into the English pharmacopoeia, along with advocacy of scrapings from the skull of a dead man. He had many admirers.

This century also saw the beginning of the careers of such famous doctors as John Radcliffe, Samuel Garth, and John Arbuthnot, all physicians to the royal families, all popular. Radcliffe (1650-1714) became rich. He left his great fortune to Oxford University for a library and for an infirmary, observatory, and several hospitals. In his early days he said his own library consisted of a few phials, a skeleton, and a herbal. Garth (1661-1719), who had also literary ability, wrote a long Homeric poem called "The Dispensary", describing a mock battle between doctors and apothecaries in which the doctors won; and then he established a dispensary where drugs could be obtained cheaply for the poor. Pope gives us the following lines to show the reason for the rumpus:

"Modern 'pothecaries taught the art
By doctor's bills to play the doctor's part."¹

John Arbuthnot (1667-1735), a Scotchman and a wit, was, like the others, a literary light and a friend of scholars, especially of Pope, who said of him:

"Friend to my life which, did not you prolong,
The world had wanted many an idle song."

Dr. Norman Moore² says that no medical notes by Radcliffe on his cases have come down to us. We know him as a doctor chiefly by what he gave in charity and what his contemporaries said of him. Neither did Arbuthnot write much on purely medical subjects.

Thomas Willis (1621-1675), who first described the eleventh cranial nerve and the "circle" at the base of the brain, also belonged to this period. He lived in Wiltshire, and was an expert anatomist. His bump of localization made him place the seat of common sense in the *corpora striata*, imagination in the *corpus callosum*, and memory in the *cortex*. (See Garrison, p. 197.) He diagnosed diabetes by the taste of the urine, and he first named puerperal fever. As a doctor he was very popular, and even in his portrait his eyes seem able to pierce the patient and find his ailment.

Of many another physician of this century, there is no record other than that on his tombstone; and we are reminded of the epitaph in

¹ All these doctors charged enormous sums for their advice, and grew rich from their practice. Their incomes amounted at times to £10,000 a year.

² Moore, Norman, "The Seventeenth Century in Medicine".

Southwark Cathedral, London, to a once famous Dr. Lionel Lockyer, who died in 1672.

His virtues and his pills are so well known
That envy can't confine them under stone.
But they'll survive his dust and not expire
Til'all things else at th'universal fire.
This vase (if lost his pills) embalms him safe
To future times without an epitaph.

The history of the famous Chamberlen family, inventors of the short obstetric forceps, mainly falls into this century.¹ Originally Huguenots, the family fled to England in the sixteenth century. There were many sons, nephews and grandsons, seven of whom were named Hugh or Peter. All were pledged to keep the secret of the forceps, by means of which they acquired a large obstetric practice among the rich of England. Some of the Chamberlens were veritable quacks, others had excellent educations. Two of them became royal *accoucheurs*; and several of them were of great service to midwives. It was not until the end of the century that the secret of the forceps "which shortened labor unbelievably" was sold to Von Roonhuysen in Holland. As already stated, one of the Peter Chamberlens (1601-1683) tried to elevate the midwives of England, and provide means for educating them.

In France this was the century of Descartes (1596-1650), Molière (1622-1673), and La Fontaine (1621-1695); all three men studied, or at least dabbled, in medicine.² Descartes wrote a book called "*De*

¹ Aveling, J. H., "The Chamberlens and the Midwifery Forceps", 1882. See also articles in Dict. Nat. Biog., etc. The Chamberlens fled from France to England in 1569. They lived in or near Southampton where they were allowed to practice as physicians and obstetricians, but not as surgeons. Peter III, born in 1601, arrogantly tried to make himself sole examiner of midwives. This angered the Corporation so that they denounced his "instruments of iron." In 1661 he was appointed Royal Physician by Charles II, "ordinarily Attending our Happy Births, and (therefore) one of our First Servants." In 1676 his son Hugh went to Paris to sell the secret of his forceps, but his price was too high, about \$10,000. To prove their value, he was allowed to use them on a difficult labor case, but failed to produce the baby. One of the Chamberlens was buried in Westminster Abbey.

² Descartes was the author of the famous dictum *Cogito, ergo sum*. Philosopher and mathematician, in his way he did much for medicine. He was a friend of Queen Christina of Sweden, where he died in 1650.

Molière was born in 1622, six years after the death of Shakespeare. The doctors whom he had so ridiculed refused to attend him even when he was racked with cough in the final stages of phthisis or aneurism. A hemorrhage ended his life at the close of a theatrical performance. He puts the following words into the mouth of a candidate for a medical diploma: "I promise to wear a long gown with wide sleeves, a doctor's cap on my head, a knot of scarlet on my shoulder,"—this was his oath! Graduation in France was possible after two years of study of the theory of medical practice. The students' robes were of black, and they made a picturesque sight kneeling at the feet of a professor in long red velvet gown, his head covered by a square cap.

Homine", which is said to have been the first book ever written on scientific physiology. He located the soul in the pineal gland, and gave us the theory of reflex action. He also wrote on the eye as a photographic plate of reflex action (1637). Molière, on the other hand, regarded the average doctors of his time as impostors; and, being convinced of the influence of mind over matter and of the value of mental healing in disease, he tried to show his belief by his satires. He acted in his own plays; and up to the last hour of his life tried to forget his own physical agony on the stage in order to give his company one more day's wages.

La Fontaine, curiously enough, besides his fables and other writings, wrote a long poem on the quinine plant! He dedicated it to one of his admirers, a medical student named Anne Maria Mancini, a niece of Cardinal Mazarin, who greatly admired the Duchess of Chinchon,¹ and whose favor he desired to obtain to further his own admission to the Academy. In it he sings of the cures made by this bark from far Peru; of its superiority over the withdrawal of pints of blood from an already debilitated patient; describes the circulation of the blood; shows how the pulse indicates fever, how chills affect the vital spirits, and maintains that the fever of malaria is caused by a poison boiling or fermenting in the blood. He thinks that this precious "bark of Apollo" counteracts the acidity or poison in the system, especially if it is administered with hot gin. An altogether unpoetic but interesting poem on an unpoetic subject.

Guillaume de Baillou (1538-1616), an earlier writer of this century, is not known to have regularly practiced medicine, although he studied and wrote on medical subjects. He was Dean of the Faculty of Medicine at Paris, and in spite of civil wars—he being a Protestant in the midst of Catholics—and even through an epidemic of the plague he stuck to his writing. Afflicted himself with rheumatism, he wrote about it and first so named it. He thought it was caused by a flow of humors from the liver into the blood, which settled in the muscles and joints with "dolor and calor if not with tumor." He fancied that his blood serum was "putrid," as he put it, that "caco-chymie" caused this putrefaction, and that bleeding and fumigations should cure it. It is possible his own four children may have had the whooping cough, for his observations of this disease are well done and apparently at first hand. He and Sydenham reverted to the Hippocratic method of studying disease by keen observation, and, like him, he believed that the "*vis*

¹ Dr. Barbillon, "*Études critiques d'Histoire de la Médecine*," 1930.

medicatrix naturae" was the cure for all ordinary diseases. At that time, however, whooping cough was something extraordinary. It was called in England "kink-cough" and "kink-host"; while in France it was called "*coqueluche*" from its noisy crowing sound.

Riolan (1577-1657), a court physician as well as a renowned anatomist, vigorously opposed Harvey's theories, while Riverius of Montpellier, just as skilled a dissector, upheld him. This battle over the circulation raged for nearly fifty years. In the meantime Renatus Moreau, in 1625, brought out a new edition of the "*De Valetudine*", or the "School of Salerno", a work on hygiene, dedicating it to Cardinal Richelieu, who was interested in medicine, and who helped his own niece to found a hospital in Quebec. Mauriceau (1637-1709), one of the earliest *accoucheurs*, brought out a new book on obstetrics, full of quotations from Louise Bourgeois, and very finely illustrated by copperplate engravings. Mauriceau's work was in turn widely translated and for many years used freely by plagiarists.

In Denmark in this century the most outstanding figure was the anatomist Nicholas Stensen (1638-1686), from whom we get the name *Steno's duct*. Stensen's face, as we see it in his portraits, is that of an ascetic, with an expression of intense concentration. Study was indeed his ruling passion, as it was that of his compatriot, Thomas Bartholinus (1616-1680), who named and described the thoracic and other lymphatic ducts. It will be noted that many of the medical researchers of this century made their names immortal by giving them to some portion of human anatomy which had not been previously named.

In Belgium, during the early part of the seventeenth century, Johann Baptiste Van Helmont (1577-1644) was the leading authority on organic chemistry. He invented the term "gas", which, however, was unused for a century and a half until Lavoisier revived it. Van Helmont was the first to examine the secretions of the stomach and liver, and study digestion from that point of view. He decided that man's *anima sensitiva motivaque* lay in the pit of his stomach—but what woman has ever doubted that fact? Coming from a Capuchin mystic this announcement, however, had great weight; especially as the spirit, or *anima*, was supposed to be due to a chemical ferment which he called "gas." It was his son who attended Anne Conway.

Holland, however, produced the greatest microscopists, chemists, and physiologists of this century, men whose lives are found in every history of medicine. Here it is possible to mention only those whose work

has a direct bearing on the work of medical women, citing by name only such famous investigators as Von Leeuwenhoek (1632-1723) of Delft, Swammerdam (1637-1680), Tulpius (d. 1673) of Amsterdam, and Sylvius of Leyden (1614-1672).

Regner De Graaf (1641-1673), of Schoonhaven and Delft, besides doing remarkable work on the internal secretions, was the first to describe the process of ovulation. He gave his name to the Graafian follicles in the ovaries. He was most liberal in his views as to the education of women, a friend to the Puritans, and in many ways a helper of humanity. Hendrik von Deventer of The Hague (1651-1724) was the first Dutchman to take up obstetrics personally as a specialty, and to study malformations of the pelvis and the care of labor in such cases. He and Van Roonhuyze made it a point to teach midwives wherever and whenever possible, and wrote books for them in order that they might improve their technic and so save the mothers and babies of Holland. Frau Cramer was their pupil. These men were excellent surgeons, doing Caesarian sections in cases of rachitic pelves, operating on vesico-vaginal fistulae, and, as Howard Kelly says, doing as good work in many respects as any modern gynecological surgeon.

It has already been noted that Leyden had a famous medical school in the seventeenth century. William of Orange had founded it in 1575 as a memorial to the soldiers who had died in the war of liberation. When John Evelyn visited Leyden in 1641 he was charmed to find that the architects had copied many features of the medical school at Padua. Here it was that many of the greatest Dutch physicians and surgeons and chemists received their training; women were not, however, admitted to its halls for more than two hundred years.

Germany is represented by the Jesuit priest of Fulda, Athanasius Kircher (1602-1680), the first scientist to use the microscope systematically in investigating disease. Kircher, like many of the noted scholars of Germany, was a mathematician, musician and naturalist; but he discovered pus cells under his lenses, studied embryology, and, like Harvey, discarded the theory of spontaneous generation.¹

To Johann Remmelin of Ulm (b. 1583) we owe one of the first

¹ Garrison (p. 184), refers to Kircher as the first to use the compound microscope. He thought that he discovered worms in all putrefying matter, especially in diseased blood. He collected specimens; arranged them in entomological and historical groupings; and bequeathed them to the Jesuit College in Rome, where they are still shown in the Museum Kircherianum. He was a great traveler, even going to China and Persia, in search of materials in art, medicine, natural history, and geology.

paper manikins (1639) in separate layers to show the muscles and organs of the human body. One of his manikins represented a pregnant woman, another a man, and another a normal woman. There were separate diagrams, also in layers, of eyes, ears, skull, etc. all of which must have been of great service to students of anatomy who could not see or make dissections.¹ His text was originally in Latin; but it was often translated into other languages. In his, and other books, we find better illustrations than heretofore; and from among the anatomists and surgeons of Germany and the Low Countries come, as has already been noted, many remarkable paintings by the best artists of their generation. George Bartisch, for example, is shown operating on the eye of a patient, his helper attending strictly to business, his knives and bowl placed nearby; while four old books stand on a high shelf beside two flasks.²

In Italy during this century the greatest investigator was Marcello Malpighi (1628-1694) of Bologna, Pisa, and Messina. He was physician to Pope Innocent XII and many other notable people, but his name will be immortal because of his studies in histology, embryology, and physiology. To him the chick in the egg,³ the blood corpuscles, the papillae of the tongue, the air cells in the lungs were all material for interesting studies.

Malpighi's friend (and frequent enemy), Giovanni Borelli (1608-1679), a pupil of Galileo (1564-1642), was one physician and scientist who practiced medicine from the love of humanity. Garrison (p. 258)

¹ Dissections were seen in Frankfort-a-Main only eight times between 1615 and 1683.

² Holländer, Eugen, "*Die Medizin in der Klassischen Malerei*", 1903.

³ Malpighi corrected some of Harvey's theories of the circulation of the blood (notably of capillary circulation), as Harvey had corrected Aristotle as to the origin of all life from eggs. He was born near Bologna in 1628, the year in which Harvey announced his theories of the circulation. He was more of a student of natural history and microscopy than a practicing physician.

The Spaniards regard their own Servetus as the discoverer of the circulation, and have erected a monument to him in the museum of anthropology in Madrid. The Italians, on the other hand, consider their Malpighi, and the Cremona physician, Matteo Realdo Colombo, together with the Bolognese horse-doctor, Ruini, and the Pisan Cesalpinus, as the greatest anatomists after Galen. Colombo's work was published in 1559, six years after the burning of Servetus, from whom he may possibly have plagiarized. His dissections were mainly on dogs, while Ruini's work published in 1598 was on the horse. Andrea Cesalpinus (1524-1603), a pupil of Vesalius, was a pantheist, naturalist and botanist. His knowledge of the circulation was purely theoretical. To each of these investigators Italy has erected statues. Whether either knew of the work of the other, and whether Vesalius or Harvey had studied their theories is somewhat doubtful. See article by John C. Hemmeter in the *Johns Hopkins Hospital Bull.*, vol. 16, p. 163, 1905.

quotes him as saying, "To frequent societies, to visit libraries, to own valuable unread books, or to shine in journals does not in the least contribute to the comfort of the sick." He looked at the sick human body as a machine out of order, and compared its working parts to an engine under the control of nerves, or a "neurogenic principle." Thus, little by little, the diagnosis of disease was being simplified.

Another Italian, Santorio, of Venice and Padua (d. 1636) invented the first clinical thermometer and pulse-clock, though it was two hundred years before these aids to diagnosis were commonly used.

IX. SEVENTEENTH CENTURY SURGEONS

IT was in the middle of the seventeenth century that the centuries-old combination of barber and surgeon came to an end, theoretically at least. In spirit the amalgamation continued to exist, chiefly in France, until the Revolution. In 1695 a surgeon's degree permitted a man to wear a powdered or dyed wig, or to arrange his long and flowing locks as he pleased. He might hang a bleeding-basin outside his house or shop to advertise that he performed operations of all kinds—except the "operation" of cutting and curling hair, which continued to be done only by barbers.

There was one exception to the operating monopoly given licensed surgeons: the traveling "lithotomists," so called, continued to be permitted to cut for stone in the head or bladder without having studied at a university. Cutting for stone in the head was so common a piece of quackery, that many an artist of the century painted the picturesque performance; and many an innocent victim of headache was beguiled into believing that the stones cast into a tray by an assistant had been removed by a painful operation from his own forehead.

For stone in the bladder the lithotomists operated rapidly through the perineum while on-lookers held the writhing patient. At that they had about fifty percent of cures. A certain wandering monk, Frère Jean Côme, is said to have performed this operation one thousand times on patients in all parts of the country, although he was not licensed to cup or bleed or set bones. College-bred surgeons alone did major surgery. Evelyn, in 1635, tells us of a patient who swallowed a knife with which he was eating. After forty-one days of waiting the surgeons placed all sorts of magnetized irons upon his abdomen to draw the knife to the surface; these failing they strapped him to a table, opened the

abdomen by a vertical incision, used a magnet under the short ribs and extracted the knife from the stomach. Then the stomach and abdominal walls were well sutured, and various ointments of balsam, white of egg and alum mixed with clay were placed over the wound. By the fourteenth day the patient was reported as doing well, although his diet was carefully regulated for some time.

It is a pleasure to find the name of at least one woman surgeon in England in this century the equal of Marie Colinet of Switzerland. Edmund Gosse tells us of this Mrs. Holder, who was called "a rare she-surgeon." By her successes in major operations she earned the envy, and even the hatred, of the Court. She had cured a wound in the hand of the King, Charles II; but, although well educated and not a quack, she was not recognized by the College of Surgeons.¹

No surgeon of the seventeenth century was more skillful than Fabricius of Switzerland, to whom we have already several times referred. Typical of his reports is the case of a woman who came to him with cancer of the breast. All sorts of plasters and internal remedies had been used by physicians to reduce the hardness of the gland which had by then become ulcerated and fetid, but to no purpose. He says that she had had a broken breast when nursing her last baby, that its milk had coagulated and formed an abscess, which had degenerated into a cancer of five years' duration. The glands in her axilla were as large as a fist. She was prepared for operation by purgings, bleeding and diet; Fabricius excised the tumor, but "her life slowly ebbed" because the "milk had carried the infection to the stomach and to her whole body."

He understood the hopelessness of cancer of the breast, and also the necessity of operating at an early stage. We have already noted that Marie, his wife, also amputated breasts for cancer, and performed all other operations with equal skill. An English surgeon named Wiseman, in the middle of this same century, also came out boldly for early operation in cases of cancer of the breast; he laughed at the absurdity of trying to cure cancer by the King's touch, magic oils, and cataplasms, even though from the time of Edward the Confessor it had been thought that to kings had been given magic power to heal skin diseases, and it is recorded that Charles II of England "touched" nearly a hundred thousand patients.²

¹ Gosse, Edmund, "A Doctor to Kings," *Harper's Magazine*, Jan. 1905.

² Holmes, Oliver Wendell, "Currents and Counter Currents," 1861, p. 60.

Besides the little volume on surgery by Fabricius there was a large encyclopedia of surgery published in Frankfort by Peter von Uffenbach in 1610, which contained 1200 folio pages of fine print with monographs from seven old authors, including both Ambroise Paré and Fabricius. It was called the "*Thesaurus Chirurgiae*." In its pages every one of the usual surgical instruments was shown, as well as pictures of all the monsters and impossible animals conceived by earlier writers of the Bestiaries.¹

If the medical women of the seventeenth century were not great medical researchers or writers it may very well have been because they were too busy. Certainly there was plenty for them to do; if there had been nothing else, the various epidemics that raged with unabated fury all through the century would have been enough. Leprosy had by now in the main died out, because of the many lazaret houses where lepers had been isolated and because of the general improvement in living conditions. Syphilis also was under considerably better control, thanks to its mercurial treatment. Typhoid, dysentery, plague and smallpox were now the great endemic diseases. Scurvy also raged in Germany during the Thirty Years' War; and because of it, and war and starvation, one could wander for miles in that country without meeting a soul. Plagues of grasshoppers, new comets, terrific earthquakes and other alarming phenomena added to the cases of insanity, also to the accusations of witchcraft.

Defoe, Pepys, and Manzoni all tell us of the horrors of the plague: in some regions only one person in a thousand escaped the disease. Defoe remarked that rats were everywhere, although he probably never thought of them as carriers of disease. In Moscow in 1601 to 1603 there were 127,000 deaths from the plague; and in London in 1665 it carried off 69,000 victims. In Milan² so great was the fear of contagion in 1630 that a man who happened to wipe his fingers on a wall, in passing, was put to frightful torture to make him confess that he did it with malicious intent either to spread the plague or to poison some one!

¹ Among the books on pediatrics published in this century were: Ferrarius, "*De Arte Medica Infantum*", 1604; Guillemeau, "*De la nourriture . . . des enfans*", etc., 1609; Glisson, "*De Rachitide*", etc., 1650; Primrose, James, "*De Morbis puerorum*", 1659; Franciscus de la Boë Sylvius of Leyden, "*De Morbis Infantum, in Praxeos medicae idea nova*," 1674.

² Manzoni, A., "*I Promessi Sposi*," 1925, gives an account of the plague in Milan early in the seventeenth century.

X. SEVENTEENTH CENTURY PHARMACOPOEIA

BUT, whatever might have been the disease or the diagnosis pretended remedies for it were legion. Kipling,¹ in "Our Fathers of Old," enumerates many of the medicinal plants which were used by the men and women of the seventeenth century.

Lord Bacon proposed to ward off old age by means of diet, exercise, and certain medicines, among which he praises especially gold, amber, viper's flesh, rosemary, aloes, and pearls. He says that, as gold represents the sun, it is the most powerful remedy known; and, as viper's flesh came from an Ethiopian dragon, it could remove all pain; it was only necessary first to catch the dragon and ride off through the air on it to soften its flesh², then to use it. The old Salernitan poem, once more revived, asks the question, "Can a man die if salvia grows in his garden?" the reply being, "There is no other plant so useful."

The humoral theory had not yet gone into the discard, and therefore all remedies were more or less based on bile and blood; but, when the first pharmacopoeia was published by the College of Physicians in England in 1618, every known remedy of the ancients was with great catholicity recorded there. It was 1721 before the list was condensed and simplified, and many time-honored remedies expurgated. The apothecaries were ordered to follow this first pharmacopoeia strictly. At the very end of the century, in 1699, in France, the Academy of Sciences also published a universal pharmacopoeia; but there also the doctors and apothecaries still clung to the old remedies of Dioscorides, and it was long before they even took kindly to cinchona. John Evelyn said that King Charles II would not take quinquina, as he called it, for malaria, because it was prescribed neither by papist apothecaries nor physicians. It was evidently not given to Evelyn's own son when he

¹ "Wonderful little, when all is said,
Wonderful little our fathers knew,
Half their remedies cured you dead—
Most of their teaching was quite untrue—
Look at the stars when a patient is ill,
(Dirt has nothing to do with disease,)
Bleed and blister as much as you will,
Blister and bleed as oft as you please.
Whence enormous and manifold
Errors were made by our fathers of old."

² In the "Code of Health and Longevity" (vol. 4, by Sir John Sinclair, Bart. 1805) there is a collection of the writings on this subject by Lord Bacon, Sir William Temple, Richard Mead, Boyle, Heberden, etc., upon which we have a good commentary by E. T. Withington ("*Opera hactenus*", etc., Fasc. 9, p. 42), to which the reader is referred if the original writings are not available.

had the quartan fever in 1657, and the child died. The "women and maids," said the grieved father, "killed the boy by wrapping him in warm blankets to suffocation." Why he had not prescribed cinchona for the child himself we do not know, for, as a medical student in Padua, he must have seen malaria and heard about the new remedy. He had seen so many dissections in the old hall that, after the death of his boy, he insisted upon an autopsy at which, he writes, it was found that the child "was liver-grown."

The favorite remedies for every disease were still bleeding and purging. More so than ever, in fact; for after the sixteenth century bleeding was tremendously overdone. Physicians ordered it, and surgeons did it, to the great satisfaction of the patients, "some of whom were bled without remorse, without measure and without mercy." Guy Patin bled an old man of eighty eleven times in six days. He also bled his wife a dozen times for fluxion in the chest. Louis XIII was bled forty-seven times in one year, and his physician, Charles Bouvard, also administered to the king two hundred and fifteen purgations and two hundred and twelve enemas. According to the autopsy report Louis died of abdominal abscesses and worms, at the age of forty-two. One of this king's favorite remedies was a mixture of honey and manna with ground coral and pearls. He also frequently took a concoction made of dried viper's flesh soaked in honey and rose petals to prevent poisoning.

Le Sage, in "*Gil Blas*," makes fun of all this bleeding, etc., referring to Dr. Sangrado, who "drew off 18 good porringers of blood from the old canon in two days."¹ The barber-surgeons used beautiful majolica or glass bowls and glasses for this work, and owned fine lancets for scarification. Vomits were not so popular. When the Duke of Bedford² was ill, in 1700, Dr. Radcliffe was called in consultation and forbade the surgeons to weaken the Duke further by a vomit; instead he ordered blisters to absorb the "hydropic humors," although these were not given him because of "interference and fussiness of the patient's relatives." So the Duke died, "in a moment, from pressure of the humors."

At a time when people could believe in witches they naturally also believed in the healing power of the king's touch, as has been shown,

¹ See picture in Garrison, p. 228, and others by Rubens, Teniers, Van der Neer, and their contemporaries.

² "Correspondence of Samuel Pepys", vol. 4, p. 298, From a letter by Dr. Charlett.

and in amulets and absent treatment. In Shakespeare's day there were thought to be two kinds of witches, good white ones and bad black ones. They were all called "beldame trots"; some of them were lame and palsied, others were withered, with beards, and skinny fingers. They went about with their black cats; fashioned images in wax and stuck them full of magic needles to harm their enemies; and they could sail across the sea in egg shells. But these were not the only current superstitions. Sir Kenelm Digby and Fabricius of Hilden believed in the "sympathetic powder" and in "weapon salve."¹ Digby was knighted for making this powder, which, as is now well known, was nothing but vitriol reduced by the sun. King James I and Charles I both used it at a distance, i. e. by having their garters dipped in it. The bloody bandages of an injured man were soaked in the powder and then buried; or the weapon that inflicted the wound was treated with "Fabry's" salve, while the patient was merely treated by strokings. Sir Thomas Browne was a little doubtful of the value of these cures, as well as of the royal touch, lest they could not be reconciled with religion. Shakespeare, in "Macbeth" (Act IV, Scene 3) has one of his characters tell how the king... "strangely visited people all swoln and ulcerous, pitiful to the eye, the mere despair of surgery, he cures." King Henry IV of France "cured" 1500 people of scrofula; and even as late as Queen Anne, who died in 1714, untold numbers were "cured" by her touch.

Sometimes the physicians of the day had to resort to still other cures. The bezoar stone, an antidote for all poisons, has been already mentioned. It was set with costly jewels in a locket or snuff box. In Italy there was a dance cure for mental diseases. In France, Louis XIV, who died of gangrene caused by the chafing of his garter, was given wild asses' milk to drink, while hot spiced wine was applied to his leg. Toothache was cured by taking a many legged worm called a swyne louse, pricking it with a needle, and then pricking the tooth with the same needle. The cure was immediate! There were also Rosicrucians, Zoroastrians, and many believers in talismans. Sometimes, following the practice of very ancient times, meaningless phrases were repeated before swallowing a pill. Innumerable impostors and mountebanks got rich from a gullible public. Even Glauber, with his famous salts, was roundly denounced by Cromwell for keeping his remedy so secret, and at so high a price, that the poor could not get it.

¹ Miranda, in Dryden's "Tempest" (Act V, Sc. II) wraps Hippolito's sword in this powder or salve, and he is cured at once.

The polypharmacy of Nicholas Culpeper of this century was a relic of all the ages; as was theriac, with its sixty ingredients, which was still one of the mainstays of the pharmacopoeia. Two tuns of theriac, each holding 1500 pounds, stood outside the door of the Paris school of medicine at all the important ceremonies. "Orvietan" was another favorite mixture: it was theriac plus twenty-seven additional ingredients, or almost a hundred in all. A book with the title "*Medicus microcosmus*", published in 1660, contained medicines made from nearly every part of the human body—urine, faeces, hair, nails, saliva, eyes, brain, bone, and spermatic fluid, any one of which "if mixed with human blood would make a magic philter to resist all diseases." Melchisedec Barry claimed to cure all skin eruptions, to keep hair black, to cure the pains of childbirth, and "save the baby" by his secret remedies. Dr. John Hall, Shakespeare's own son-in-law, was notorious for his polypharmacy. His "Marrow of Chirurgery",¹ published in 1657, contained scores of queer old remedies. Pierce Dod,² boasted that the waters of Bath, inside and outside, would cure "gout of protean character, make grey hair brown and cause it to grow an inch a month and become curly." Booksellers had their own favorite remedies on sale; and theatrical troupes advertised patent medicines most lucratively, being wise enough to use language easily understood rather than in such verbose phrases as: "Thrush is caused by the acid vapors of milk the cure of which is by obtunding the acrimony by proper absorbents and gentle purgatives."

Syphilis, which came to Europe as a plague in the sixteenth century, was treated with great heroism in the seventeenth. Le Clerc's treatment was: The patient must have an abundant sweat, colonic irrigations, be purged with mercury and jalap, be bled, rubbed with viper's grease and mercury and turpentine, and the doctor must examine his mouth from time to time to see that he is not badly salivated. A certain amount of swelling of the mouth, palate and gums was to be expected.

Many good characterizations of the pseudo-medical men of this

¹ Walsh, James J., "The Century of Columbus", 1914, p. 426, quotes Dr. Hall as writing a surgical poem, one stanza of which is:

He is no true chirurgien
That can not show by arte
The nature of every member
Each from other apart.

² This is in a collection of tracts collected by Dr. John Freind in the Library of the British Museum. See p. 28 of the last article.

period have come down to us. Samuel Butler (1612-1680), the author of "Hudibras," says:¹ "A Medicine-Taker . . . has a sickly Mind, and balances the Infirmary which is in his Body; like one that drawes the wrong Tooth, and fancies his Pain in the wrong Place. The less he understands the Reason of Physic, the stronger Faith he has in it He is no sooner well but any story or Lye of a new famous Doctor, or strange Cure puts him into a Relapse and he falls sick of a Medicine instead of a Disease, and catches Physic . . . always tampering with his Health till he has spoiled it."

Compare the above with this from Dudley, third Lord North (1581-1666) (Murphy, p. 237): "A Good Physitian (if any such there be) for bad enough is the best . . . will more affect the life and health of his Patient than his own gain and living, and will not minister Physic to him to do good to himself . . . He will not condemn an honest Emperick, knowing that his own Art grew out from experience often casuall Purging medicines shall be his last refuge." And this from Sir Thomas Overbury (1581-1613), who characterizes a Mountebank or a Quacksalver as "one who took his first being from a Cunning woman and stole his black Art from her while hee made her Sea-coale fire . . . All the midwives in the Towne are his intelligencers . . . His especiall practise is upon women; labours to make their mindes sick, ere their bodies feele it, and then there's work for the Dog-leach." (Ibid, p. 113)²

XI. THE SEVENTEENTH CENTURY—CONCLUSION

THE preceding pages have shown that, although the seventeenth century was full of opportunities for the advance of women in medicine, they were not very obvious, and progress was slow. Women had not learned to work together for any cause, or to throw off their heretofore accepted rôle of amiable dependents. They still failed to grasp the idea that in order to be of greater service in the world they must have more education. Two centuries later, in 1869, John Stuart Mill³ said: "What is now called the value of women is an eminently artificial thing, the result of forced repression in some directions, of

¹ From "A Cabinet of Characters," by Gwendolyn Murphy, 1925, p. 306.

² For portraits of many of the medical men and surgeons of this century, and an account of the artists who painted medical scenes, see Garrison's "History of Medicine".

³ Mill, John Stuart, "Subjection of Women," 1869, pp. 38, 187.

unnatural stimulation in others. It may be asserted without scruple that no other class of dependents have had their character so entirely distorted from its natural proportions by their relations with their masters When we consider the positive evil caused to the disqualified half of the human race . . . there is no lesson which they (men) more need than not to add to the evils . . . by their jealous and prejudiced restrictions on one another." That, in the seventeenth century, and in fact up to the middle of the nineteenth, the character of women was largely artificial can hardly be denied; for most of the mental differences between men and women even today are the results of their up-bringing. "Women's inferiority," says Baker,¹ "is increased by the trifling courtesies which men perform for them"; but whether that is true or not, it is true, as Sherwood Eddy says, that "the artificial differentiation between the sexes has handicapped women at almost every point woman remains the undiscovered continent of a new humanity."²

Although women were not filling important rôles in the seventeenth century it was, nevertheless, one of great progress is medicine. Such men as Harvey, Sydenham, Malpighi, and Von Leeuwenhoeck added greatly to anatomical and physiological knowledge. Important new medical tools such as the compound microscope and the obstetric forceps were invented. New books were written. There were several large theatres for the teaching of anatomy by dissections and many competent private teachers willing to teach women.³ But, generally speaking, in all these advances seventeenth century medical women had comparatively little part. Nor did they even adequately take advantage of the new facilities offered them. Women have since proved themselves unusually good microscopists. They might have bought the new compound microscopes of that day, queer though they seem to us, and learned to interpret what they saw through the lenses. But they did not do so. It was left for a Malpighi to study the capillaries and their anastomosis in the web of a frog's foot; and for a Van Helmont to test urine for its specific gravity and albumen, and for a Willis to test it for sugar. Women, however, were still the best obstetricians.

Nor did women in those days lack either admirers or defenders, especially for merits more enduring than mere physical beauty. In the

¹ Baker, John R., "Sex and Civilization," 1928?, p. 164.

² Eddy, Sherwood, "Sex and Youth," 1929, pp. 245, 268, 269.

³ Anatomical theatres were built in Dresden in 1617; in Copenhagen in 1644; in Edinburgh in 1697; in Vienna in 1658; in Strassburg in 1671.

preceding century Cornelius Agrippa had written a book entitled "Female Pre-eminence, or the Dignity and Excellence of that Sex Above the Male". He was the physician of the Emperor Charles V; whether he was laughing in his sleeve, or actually meant what he wrote we can only wonder. Prince Charles of Orleans was, even earlier, another admirer of women. He did not fear to sing their praises, especially after the death of his beloved wife, whose equal he said he never expected to find:

"Only in dreams such thoughts can be
How God hath made her good to see."

And in 1693 Charles Butler wrote a song on the superiority of women when there was any kind of work to be done. It comes into a treatise on the culture of bees, "The Feminine Monarchie or the History of Bees". In 1652 Pierre LeMoynes, in his "Gallerie of Heroick Women", already quoted, says that any weakness in women comes from lack of education, and from an excess of humidity due to lack of exercise. He adds that courage is needed in women to bear the hardships of marriage which, though well gilded, are yet painful. But on the other hand, whether it be painful or not, he points out that women need pain and adversity to preserve them from even greater weakness.

In various other respects the seventeenth century was a stirring age. It saw the birth of the first newspaper, the first medical journal, and the first organized charity association, these being the work of one man, a Huguenot medical student of Montpellier named Renaudet. When only nineteen, having graduated in 1606, he went on an educational journey through England and the Continent. He found so much suffering among the poor as to make him eager to relieve their wants more systematically than by casual charity. He appealed to Richelieu and King Louis XIII for permission to organize relief stations where men might be given work in exchange for the necessities of life. This was quickly granted. He then got the consent of these same powerful persons to publish a journal containing the news of the world. It was a four-page publication and successful from the start. Nine years later he added medical news to his "sheet," and continued to edit it until he retired under a cloud in 1653.

Nor was this all. We have mentioned Jansen, and his compound microscope (1590), improved in 1620; Harvey, and the circulation of the blood (1628); Van Helmont, and his new theories of the chemistry of digestion and fermentation (1640); DeGraaf, Malpighi, Bartholinus and Van Leeuwenhoek, and their discoveries which entirely

changed all theories as to the functions of the sex organs (1641-1677); Dekker, and his discovery of albumen in the urine (1673); and Willis, and his discovery of sugar in the urine (1674). But there should be added Newton, and his announcement of the law of gravitation (1682); such further new discoveries in anatomy as Wirsung's pancreatic duct; Highmore's antrum; Glisson's capsule; Wharton's duct; Willis' circle; Haver's canals; Cowper's glands; Steno's duct; Peyer's patches; etc.;¹ and such new remedies, other than Peruvian bark, as arnica, valerian, belladonna, digitalis, and laudanum.

Among the new medical books written by Englishmen were many works on materia medica, especially that of Nicholas Culpeper (1670), "compiled, translated and amplified from many writers." There were also Murrel's book of receipts for everything from bruises and burns to the making of cakes (1617), dedicated to "Ladies and Gentlewomen"; and Durant's "Art and Physic Join Hand in Hand, or The Poor Man's Daily Companion", wherein, for two pence, one might learn how to cure any "Distempers Incident to the Human Body". William Lilly wrote books on astrology and divination between 1644 and 1652 which became best sellers; and Gabriel Naudé of France wrote one defending astrologers and seers against the accusations of slanderers. That superstition was not yet dead was attested by John Baptista Porta, who, in 1658, published a work on magic in no less than twenty volumes.

Several important books on gardening were published in this century, among them, Gerarde's "Herbal" (1597), republished and augmented in 1633 by Thomas Johnson. Gerarde was a Master Surgeon and a botanist, who had charge of the gardens of Lord Burleigh in the heart of London. In 1629 John Parkinson, an apothecary of London, published the "*Paradisi in Sole, Paradisus Terrestris*", which described over a thousand plants, figuring 780 of them on wood blocks. Four London "Pharmacopœias" were published in this century, each containing the nasty remedies of by-gone ages. Everard Maynwaring wrote a "Medicus Absolutus", or "The Compleat Physitian", to call attention to the more common of medical impostors. One quack doctor wrote a book in 1651 to show how to make a luminous water by distilling the tails of glow worms, and thus to avoid the necessity of relying upon candles for light.

¹ The first successful vein-to-vein transfusion of blood was performed by Edmond King in 1665 (Baas, p. 413). Various forms of transfusion had been previously tried, even by using the blood of a lamb, but had been invariably fatal.

Chapter X

Medical Women of the Eighteenth Century

I. THE CULTURAL PLACE OF THE 18TH CENTURY

HISTORIANS¹ agree that the eighteenth century was on the whole unproductive of great advances in art and medicine. There were many discoveries in chemistry and electricity, and many mechanical inventions such as the spinning-jenny, the cotton gin and the steam engine; but for medicine all that can be said is that it reached a position from which it could, and did, leap ahead in the century following. The eighteenth was a century of famous literary men in England, of great philosophers in Germany and France, of active propaganda for greater human freedom everywhere, a propaganda which resulted in political upheavals in nearly every country of Europe. The maps of the world were changed and rechanged, territories being shuffled like pawns on a chess-board. Spain and Italy lost valuable possessions to France, Austria and Holland. Poland was first divided into three parts, and then as an entity wiped entirely off the map. England gained India and parts of Africa, but lost her American colonies; while France lost Canada before the American Revolution, and was torn at home by political strife. Russia became a great nation; Switzerland became a republic; and Holland gained independence; but Greece was almost submerged by the Turks. Venice lost her autonomy; and Prussia gained national status, and began to lord it over Germany. The English navy won supremacy on the seas in order to protect her commerce, and, by

¹ Woodrow Wilson's opinion of this eighteenth century was uncomplimentary. He said it was tedious, unheroic, with no noble or moving ideals. Fat Queen Anne and the heavy provincial Georges were the rulers of England. Religion had cooled; philanthropy had not been born. The poor were degraded, and the rich flung morals to the winds. Country gentlemen ruled as magistrates, justices and landlords, sometimes equitably, oftentimes not. (Woodrow Wilson, "John Wesley's Place in History." Wesleyan University, Commencement Address, 1904.)

the end of the century, the land boundaries of most of the countries of Europe became, roughly speaking, what they were before the Great War.

We have noted that the eighteenth century was remarkable for its writers, especially in England. Most of them were men: Defoe, Pope, Addison, Swift, Gibbon, Burke, Goldsmith, Dr. Johnson, Robert Burns, Fielding, Sterne, and Smollett. But, with them were several women: Sarah Fielding (1710-1768) published a novel in 1744, "The Adventures of David Simple in Search of a Faithful Friend," which was highly regarded by such critics as Burke and Dr. Samuel Johnson. Dr. Johnson was also a friendly critic of Fanny Burney D'Arblay (1752-1840), who will long be remembered for her charming descriptions of contemporary daily life. Hannah More (1745-1833) wrote hundreds of prudish short stories and thousands of religious tracts for the education of young people, although she was opposed on general principles to the higher education of girls of the lower classes. And there was Mary Wollstonecraft Godwin, of whose morals Hannah More strongly disapproved, but who was the forerunner of all the later women suffragists and educators. In 1792 she published her "Vindication of the Rights of Women", which shocked the Puritans of both England and America. "She is a disgusting and unwomanly creature" said Horace Walpole; and they agreed with him.

While a few women were thus emerging from the chrysalis sleep of centuries, throwing conventions to the winds, writing novels and tracts, and even speaking publicly about the need of righting social wrongs, others, weary of the monotony of their daily life, were beginning to travel all over the globe in search of education, amusement and adventure. Not that travel was yet either easy or comfortable.

The letters of such travelers as Mary Godwin, Lady Montagu, and especially of Mariana Starke, who wrote "Letters from Italy, between the Years 1792-1798", are a mine of information.¹ She traveled by stagecoach, sedan-chair, donkey-back, horseback, ox cart and on foot. She found the roads in France, and a few French hotels, the best in Europe; the worst beds and the dirtiest accommodations in Germany, the "least palatable food in Italy and the most thieves." No hotel had sanitary conveniences in the house, and few had washbasins in the room. In some places the beds were too short and the coverings shorter still;

¹ Mead, William Edward, "The Grand Tour in the Eighteenth Century," 1914. Starke, Mariana, "Letters from Italy", 1800.

in others they were wide enough for, and used by, four people at once. Travelers carried their own eating utensils with them, and sometimes food and bedding as well. It took two weeks to go from London to Rome, and nine days to go from London to Milan.

Sanitation was, however, keeping pace with the intellectual betterment of people everywhere; and general social conditions in Europe were somewhat better than ever before. There was less devastating famine; and the great waves of epidemics were not so severe, although smallpox was omnipresent; influenza, typhoid fever and malaria were common; and the plague broke out wherever travelers congregated. Lady Mary Wortley Montagu was able to influence society in favor of variolation; and as sanitation improved other contagious diseases became somewhat less epidemic.

Lady Montagu was only one of several educated women who, in the latter part of the century, were studying hygiene, as it was then understood, and doing their best to further sanitation, and to institute reforms in the administration of schools and hospitals, in the care of the insane, and in prisons. Among them were Elizabeth Fry (1780-1859) in England and Mme. Roland (d. 1793) and Mme. Necker (1740-1794) in France. Their attempts to better the condition of the poor and the sick were sporadic; but they were the forerunners of later, sustained movements for woman's suffrage and the higher education of women. Good roads and quick transportation, postal facilities and newspapers, were other factors.¹ If writers like Mme. de Staël (1766-1817) had used their talents to better the position of women many other great reforms would have been advanced similarly. It was she who said that the worst thing that could happen to women would be the killing of chivalry; for "after all, woman's mission in life is to help men to be good." Voltaire and Rousseau agreed with her; but Condorcet and his wife felt that any inequality in the sexes was as fatal to the progress of men as of women.²

Michelet insists that the true history of an age is not the history of individuals but of its masses, and of those masses in action. The Crusades were the result of a mob psychology. In the same way

¹ For a word picture of the times see the letters of Mme. la Marquise de Sévigné to her daughter, written in 1738, or the small volume of 1725.

² Condorcet, "The Progress of the Human Mind", p. 129, quoted by G. W. Johnson, in his "The Evolution of Woman", 1926. Mme. de Condorcet supported herself, and her sister and daughter, after the sudden death of her husband, by her literary work.

it took the political revolutions of the eighteenth century to free women from their virtual slavery. And their new freedom produced, in course of time, better schools, better hospitals, better housing, better health, none of which could have come if women had remained inarticulate. What chivalry had done in one age to effect their subjugation, the spirit of puritanism, with its asceticism, had done in another; it took the new doctrines of the non-conformists, and the "doctrine of saving grace" preached by John Wesley (1703-1791), to blow away the clouds which had for so long hung like a pall over women.¹

We have many autobiographies, diaries, and letters, that give us glimpses of the home life of the intellectual woman of the eighteenth century. Dorothea Herbert² tells us about her home in a country rectory in the north of Ireland. There was a steward, a housekeeper, a cook, a housemaid, a dairymaid, a pantry boy, a coachman and a gardener, besides a nurse for each one of the nine children under one head nurse. The only interests of these girls was their trifling music, letters, embroidery and visits. Each member of the family was unrestrainedly emotional, so that tears, hysterics, fisticuffs, family duels, sobs, and fainting fits were the order of the day. As they gave free reign to their emotions, so they let their perverted tastes lead to extravagances in dress, paint, and powder.³ They wore enormous hoops; they burst forth with "heads" or "pompons" a yard high, built of horsehair glued with pomatum and flour, upon which were displayed ribbons, glass objects, ostrich plumes, lace and jewels; they wrapped up their heads in gauze at night and must have slept with their eyes open for fear of disturbing their chignons.⁴ Their waists were made as small as possible by corsets tightened by a maid until they could scarcely breathe, while their hips were padded. They could scarcely toddle in their little shoes, and their brocaded skirts trailed in the dust. Their sleeves were finished with long, dangling ruffles; their jewels were set in elaborate filigrees,

¹ Among the important "strong minded" women of the century, we should mention not only Hannah More, whose religious fervor counteracted to some extent the political results of Mary Wollstonecraft's campaigns; but also Elizabeth Carter, who translated Epictetus; Hannah Cowley, author of "The Belle's Stratagem"; and Mrs. Thrale, the friend of Dr. Johnson, all remarkable conversationalists. Dr. Johnson and Edmund Burke said of these women that they were "a very numerous, compact, powerful phalanx in the midst of London."

² Dorothea Herbert's Diary, 1770-1789, "Life in Georgian Times," ed. by Gerald Howe, 1929.

³ Traill, H. D., "Social England," 1897, vol. V, p. 355.

⁴ See the novels of Fielding, Richardson and others of the period.

and they wore black patches on their painted faces and snowy bosoms. But the men were no less vain. Horace Walpole spent hours deciding whether to buy real lace or gauze; John Hancock and George Washington wore tight breeches, embroidered vests, brocaded coats, lace frills, white silk stockings, pumps fastened with silver buckles, and black ribbons on the queues of their well-powdered wigs. Their coaches were gaudily painted, and drawn by two or four horses. It was a picturesque age; and, although the Quakers and Puritans dressed more simply, even they looked sharply to the quality of their materials, and were most particular about the style of their collars and cuffs.

Alice Morse Earle¹ says that in New England those who wore elaborate costumes, like Peter Faneuil and his sister in Boston, had to pay a much higher rate of taxation than the strict "Congregationalists" whose religion forbade such displays of wealth. For the average women it was enough to wear a neat kerchief, a big bonnet, soft shoes, pattens in muddy weather, and a full and durable woollen skirt. Those women all worked hard, for they had to spin and weave, make soap, candles, pick geese alive for feather beds, and do a thousand duties spared them today. The Puritans believed in education—for boys; but good teachers were scarce. Most university students were preparing for the ministry or for teaching. There was sometimes a little teaching of music and science and a smattering of history. Girls might go to a "Dame school" each week, where they would learn how to read and write, and weave and embroider;² but nothing more, as none of the higher subjects

¹ Earle, Alice Morse, "Home Life in Colonial Days", 1899, quotes the following advertisement from the *Philadelphia Packet*, 1780: "Wanted . . . a single woman of unsullied Reputation . . . cleanly, industrious, qualified to manage the female concerns of a country business, as raising small stock, dairying, marketing, combing, preserving, spinning, knitting, sewing, and occasionally to instruct two young Ladies in those branches of Oeconomy who, with their father, compose the family. Such a person will be treated with respect and esteem."

² Needle work, wax work, and embroidery were the chief amusements of American women. Some of them became expert spinners and weavers. After the tea episode they drank only native herb tea. They even took their spinning wheels out on Boston Common to spin in public as a protest against taxation. One woman in one day spun the linen for a dozen handkerchiefs; another walked twenty miles, back and forth, spinning six skeins of yarn.

When colonial women traveled, they went by stage coach, occasionally, but as a rule they sat on a pillion behind their husbands. The trip from New York to Boston and back took almost a month. In 1760 there were only eight mails a year between Philadelphia and the Potomac. Benjamin Franklin was responsible for the first regular mails; and in 1766 he drove from Boston to Philadelphia setting the milestones. The stage from New York to Philadelphia took two days in good weather. The inns were comfortable, and baggage carried was in boxes as solid as the wood or pig-skin trunks of England.

was considered suitable for them. The Puritans, whether they were in England, Holland, or New England, had the same ideas about education: it must be practical. Until after the middle¹ of the nineteenth century the high schools of Hartford, Connecticut were only open to boys, although women who owned property, and were in good standing in the Congregational Church, might vote.²

Conditions in the mother country were scarcely better, as regards the higher education of boys or girls, than in the new world. There were few law schools, and fewer medical schools, in England, and some bed-side teaching of medicine in London, Edinburgh, and Dublin; but the chief aim of the universities, as in former ages, was to train ministers rather than doctors. As women were not allowed to preach, nor expected to teach, it did not seem worth while to give them any more than a rudimentary education. Although women were for the most part not matriculated at any university in England, France or Germany, there was no rule to bar them from the Italian universities. One woman at least was graduated in medicine from Bologna, one or two from Florence, and one, strange to say, from Halle, in Germany. Two young men³ of the University of Leipzig in 1738 took for their doctoral thesis the subject "*De Feminis ex Arte Medica Claris*", an historical account of medical women down the ages. In it they said casually, "There are many noted women in practice at the present time."

II. THE 18TH CENTURY—MIDWIFERY AND MEDICINE

IT was in 1750 that Voltaire declared that doctors were pouring drugs of which they knew little into human bodies of which they knew less. But popular ignorance and credulity were so great that they can hardly be blamed. It was a time when all sorts of medical nonsense flourished. New sects and "schools" of medicine were cropping up daily, animal magnetism, phrenology, homeopathy, Perkinsism, hydrotherapy, etc. Nothing was being done by the regular medical schools to counteract the

¹ Beard, Charles A., and Beard, Mary R., "The Rise of American Civilization", 1930, p. 172.

² Although no provision was made in any town in New England for the higher education of girls, they were punished for wearing wide sleeves, or put into ducking stools for a scolding tongue. Even schools for Indians antedated schools for girls.

³ Polycarpus Fridericus Schacher and Joannes Henricus Schmidius.

spread or these irregular ones, nor in fact were the regular medical courses much better.¹ Most men studied for four or five years in a desultory way with a physician, grooming his horses, driving with him to make his visits, compounding his pills, distilling his tinctures, but spending very little time in actual study or by the bedsides of patients. If the teacher were a surgeon, the students assisted at his operations; they also robbed graves to obtain material for their study of anatomy. At the end of such a course the wealthy students traveled for a year or so, visiting famous hospitals or teachers; but there was no clinical teaching anywhere before 1745. A medical education at a French university in the eighteenth century was expensive. Including fees for various examinations, plus the cost of the graduation ceremony, it cost about 6000 francs.² It would have seemed absurd to spend so much money on the education of a girl. And the cost was even higher in England.

Women, therefore, who had any interest in medicine were obliged to study it from books and pick up what practical knowledge they could from relatives or friends. Midwifery they might study with licensed teachers, either men or women—Smellie in England, Boivin and La-chapelle in France, Siegmundin in Germany, and others. In 1768

Modern history was not taught in colleges in England at all until the eighteenth century, and the teaching of science was very superficial.

In 1714 John Radcliff left money to Oxford for traveling fellowships in medicine. In 1762 a lectureship in anatomy was founded by Matthew Lee; there were also to be dissections and an anatomical museum. In 1780 a clinical lectureship was founded; but, as there was no hospital or clinic either in Oxford or Cambridge, medical students left them for Edinburgh, Dublin, Leyden, Padua, and other universities. At that time the professor of physic gave seven lectures a year in anatomy; but the students were not obliged to listen to lectures, and perhaps no more than half a dozen attended them. William Cullen (1712-1790), the founder of clinical studies at Glasgow and the first to lecture there in English, tells how he obtained his own medical education. At the age of seventeen he was apprenticed to a surgeon in Glasgow for two years; then he went on a long voyage as ship's surgeon; then for a year or two he "managed an apothecaries' shop." When twenty-four he entered the University of Edinburgh, and studied from October to May with the elder Munro, after which he spent two years at the infirmary connected with the university. Even though by that time he had nothing new to add to medicine, he wrote a text-book, which was used for fifty years all over the British Isles and the American continent. In his turn Cullen took private pupils, William Hunter among the number.

Franklin, Alfred, "*La Vie Privée D'Autrefois*," 1892, p. 116. Six thousand francs was an enormous sum, for it must be remembered that money was worth many times what it is now. Money was loaned poor students for a limited time until they could repay it from their earnings (Article 29 of the Statutes of Paris, 1751), i.e., "*Eis qui manifeste pauperes erunt, si alioqui constat eos probos esse et singulari doctrina praeditos. Ea conditione ut polliceantur et publico instrumento fidem suam adstringant se bursas persolutores cum ad meliorem fortunam pervenerint.*"

accoucheuses obtained permission to attend certain lectures given by the Paris Faculty, and to be present at the autopsies and dissections of women's bodies. At that time the unfortunate girls who were delivered in the hospitals were placed four in one bed, both before and after confinement. The beds were soiled with discharges, and almost inevitably infected with the germs of puerperal fever; and, according to Tarnier, ten percent. of these women died during the puerperium. It is no wonder that syphilis was omnipresent; nor is there surprise that the nurses frequently rebelled at their work.

It is not likely that the Paris hospitals were any worse than those in other countries. By 1793, some of the wards were ventilated; the food was improved; the patients had single beds; and the straw mattresses were frequently renewed.¹ In England, in 1782, midwives were advised to go to the London Hospital for three months' training in order to be of more use in their home towns; but, though the English hospitals had a few bath tubs of a sort, and used whitewash freely, the patients lacked all comfort and what we call nursing care. As for the treatment of the insane, there was nothing at all adequate for them until the time of the Tukes and Pinel at the end of the century.²

From other sources we find that, even at the end of the century, the wards were poorly lighted and vinegar was occasionally slopped over the floor to keep down dust, smudges were made to cover worse odors, and both poultices and hot water bottles took the place of cheerful open fires. The beds, though now sometimes single, were generally closed by curtains or placed in alcoves; and under them filth and vermin accumulated for weeks at a time.³ It is no wonder that in certain hospitals one-fifth of all the patients died, and that recovery from surgery was the exception. No kindness was shown the patients. Often the nurses refused to obey orders to bleed or blister or cauterize, or even to give the drugs that were ordered. At night they called in women of the street to "watch" the dying; and it was said that the young surgeons in

¹ Nutting and Dock, "History of Nursing", vol. I, pp. 334, 468, etc.

Tenon, "*Mémoires sur les hôpitaux de Paris*", 1788.

John Howard found the hospitals St. Louis and Hôtel Dieu among the worst in Europe, while La Charité was the best in Paris, and the Hôtel Dieu of Lyons the best anywhere. The Royal Infirmary in Edinburgh was fairly clean, but in general the hospitals were not much better than prisons, especially where the doctors and midwives were men, and the matron slovenly. ("Life of John Howard", by James Baldwin Brown, 1823. His investigations were made between 1777 and 1789.)

² Gray, B. Kirkman, "History of English Philanthropy", 1905, p. 125.

³ May, Franz, "*Unterricht für Kranken-wärter*," 1784.

the wards "flung morals to the winds." The picture is certainly not alluring.

Conditions in the American Colonies were no better than in Europe. In 1783, after strenuous duties in the Revolutionary War, James Thacher settled in Plymouth, Massachusetts, and "took" six or eight medical pupils annually. It is not probable that Thacher owned modern text books.¹ Students and teachers robbed graveyards for their anatomical material, and gathered weeds by the wayside for their medicines. Thacher wrote his memoirs in his seventy-second year.² He calculated that in 1753 there were only three hundred and thirty-five doctors in all America; and, as New York City had about ten thousand inhabitants,³ it probably had not more than forty doctors. Many of these were ignorant pretenders, without medical degrees, or any "warranty" except that they had served an apprenticeship with some local dispenser of herbs or medicines. In 1776, according to Dr. Nathan Smith Davis,⁴ there were from 1,500,000 to 3,000,000 people in America, and 4,000,000 in England, among all of whom obstetrics was entirely in the hands of "midwives of little scientific training." In 1753, when James Lloyd returned from Europe, he introduced the fashion of men-midwives into the colonies; and from that time the custom grew apace. By 1775 there were two medical schools in America, that of Kings College in New York and that of the University of Pennsylvania. They had graduated fifty-one students with the title B.M. after a few months of study; but they had no hospitals worthy of the name; and the students could have seen but few patients. A few states had organized medical societies; but the registration or licensing of physicians was required in none until the nineteenth century.

Nevertheless, some little progress in medical education was being made in England. William Smellie, James Douglas, Cullen, and Munro were drawing students to their classes in medicine and obstetrics

¹ Many of the English medical writers had taught pupils from the American colonies who, in their turn, taught others. Samuel Bard, before the end of the century, wrote a book on diphtheria, Matthew Carey wrote one on yellow fever, Boylston one on smallpox, and Noah Webster one on epidemics. They had been pupils of Cullen, the Munros, Hamilton or Bell in Edinburgh, or had studied with Percival Pott, or John or William Hunter in London. (William H. Welch, "Contributions to Medical and Biological Research", Dedicated to Sir William Osler, 1919, pp. 811-817. Article entitled "The Influence of English Medicine upon American Medicine in its Formative Period".)

Thacher, James, "Mémoires." Mass. Med. Soc. Pub. vol. 15, no. 11, 1891.

² *The Independent Reflector*, New York, 1753.

³ Davis, Dr. Nathan Smith, "Medical Education and Medical Institutions in the United States of America", U. S. Bureau of Education, 1876.

from all over the world. At the same time women were admitted to private schools, and were studying the same fundamental courses as men. Smellie (1697-1763) hung a lantern at his front door advertising lessons for midwives at five shillings each. He was honestly devoted to his art; had studied in Paris with the great midwives at the Hôtel Dieu; had improved the Chamberlen forceps by the addition of a steel lock; had shown how to measure the pelvis with calipers; and had published a set of thirty-nine superb anatomic plates and obstetric tables. As he was teaching by means of a "phantom," however, he aroused the jealousy and criticism of some of the English midwives who, like him, had been trained in Paris, and who were giving actual bedside training to their students.

While the field of obstetrics was being quietly but steadily invaded by men, who were lured to it by the growing fashion among rich women to employ men for their confinements, such men as William Hunter (1718-1783), Thomas Denman (1733-1815), and Charles White (flourished 1760-1780)¹ were preparing obstetric charts for the use of the women midwives, and urging them to learn the use of forceps and calipers, which were readily purchasable after 1773.² Among the women of the middle classes, there was still a feeling that it was immodest for a woman to allow a man to be present in her lying-in room except in time of great stress, and they preferred to be delivered by women.

Besides the new obstetric charts such as those above mentioned there were new books written for midwives. Among these a popular one of the older sort had the title "Aristotle's Compleat and Experienced Midwife. In Two Parts. By W. S. A Man, midwife". This was a translation and compilation from an older book, being republished in 1710.³ Its frontispiece shows a weary woman lying in a very short bed, bolstered on high pillows and surrounded by four hooded nurses. Beside the roaring fire sits another nurse with a swaddled baby on her lap.

¹ White, Charles, "On the Management of Pregnant and Lying-in Women, and the Means of Curing but more especially of Preventing the Principal Disorders to which They are Liable", 1773.

² Spencer, Herbert R., "The History of British Midwifery from 1650 to 1800", 1927.

³ The author says that Part I is a "Guide for child-bearing Women in the time of their Conception, Bearing and Suckling of their Children; with the best Means of Helping them, both in Natural and Unnatural Labours; Together with suitable Remedies for the various Indispositions of New-born Infants." Part II contains "Proper and Safe Remedies for the curing of those Distempers that are incident to the Female Sex; and more especially those that are any Obstruction to their bearing of Children. A Work far more perfect than any yet Extant and highly Necessary for all Surgeons, Midwives, Nurses, and Child-bearing Women."

Another nurse brings a large blanket. The bed is heavily hung with curtains and a valance. A cat lies by a table on which is a wine bottle and two goblets; a large jug stands on the floor. This is evidently an authentic picture of the lying-in room of the period after the obstetric chair has been removed. The author tells us that he publishes this translation for the sake of the mothers who are obliged to employ incompetent midwives to bring their babies into the world. He says he is shocked at the number of maternal deaths and dead-born infants—tragedies which might have been prevented if midwives had known what he tells them. The author points out that he writes "in a style fitted to the meanest intellect," and adds:

"It is a disparagement to you (midwives) and reflects both upon you and your reputation and profession when you cannot deliver a woman without the help of a 'Man-Midwife' A midwife ought to be as quick sighted as Argus; and always to have her wits about her, for when her business is abroad her books are at home. And all the affections that can be in a woman ought to be in a midwife, and all the knowledge of Galen and Hippocrates in the Art of Physic in order that the child-bed may not be a death-bed."

The second part of the book contains a little treatise on therapeutics. The author says that he appreciates the pudor and bashfulness of many young women . . . that they would "rather die than discover their sex distemper to a doctor," and therefore he begs midwives to study to prevent evils as well as to cure them "for the good effect of it while you live, and the comfort of it when you come to die." In this section it is of interest to read his methods of diagnosis of women's diseases, and for their treatment. All the antediluvians are quoted, all the old cures for sterility, all the superstitions connected with the determination of sex, and all the time-worn signs of disease that had been in vogue from long before the golden period of the school at Salerno.

Another popular medical book of this century was that of John Marbury, M. D., published in 1724. He proudly says that his is not a mere translation, but is based upon his own experiences in Italy and other countries. His book is called "*The Female Physician*, containing all the Diseases incident to that Sex in Virgins, Wives, and Widows; together with their causes and symptoms, their degrees of danger, and respective methods of prevention and cure. To which is added the Whole Art of new and improved Midwifery, comprehending the necessary Qualifications of a midwife and particular directions for laying [i.e. lying-in] Women, in all cases of Difficult and Preternatural Births; together with the Diet and Regimen of both mother and

Child." This book is addressed to "all learned and judicious professors of physick as well as ingenuous and experienced practisers of midwifery." In the text the author gives a complete compendium of practical obstetrics, denouncing the "new and unnatural forceps, and the unseemly haste with which they are often applied." Nevertheless he advises men also to study his book in case they might be needed in an emergency. He says he has learned much from "old women," and so might other men "if they were not too obstinate." He gives as the proper characterizations for a midwife, rules like those given by Trotula and even of Hippocrates.

"She should be young, and vigorous, learned in her art, able to take all-night vigils, strong of arms and hands for difficult cases of turning and extraction. She must be neither ignorant, stupid, nor indolent, nor selfish, nor dissolute, nor negligent, nor forgetful, passionate, doubtful, morose, surly, nor a tipler, nor a tatler, neither mercenary nor covetous. She must have slender hands, long fingers, tender feelings, sympathy, be hopeful, and above all, silent."

But, when we stop to consider some of the details of the treatment of women's diseases prescribed in these two "new" eighteenth century manuals it is rather shocking to find the old disgusting remedies of long bygone ages, and a polypharmacy more crude than that in the days of Saint Hildegard. Scarcely one of the old herbs is omitted, to be used either in external applications, or as cathartic, or diuretic teas. The treatment for cancer of the uterus is difficult to follow, for, while admitting that cancer can not be cured, "W. S." goes into great detail to prepare for the patient a multitude of remedies. He says that cancer of the uterus is caused by melancholy, by eating corrupt meat, and by ulcers of the cervix. His advice is, at the first sign of bleeding, to take a remedy made from syrup of borage, succory, whey, black hellebore, polypodium, lapis lazuli, colocynth, etc. (this to be used as a tea), and then to anoint the cervix uteri with oil of capers, lilies, sweet almonds, jessamine, butter, hen's fat and goose grease, mucilage, fennel, althea, ammoniacum and wax. Then to apply below the navel a paste of diachylon and emulsion of figs, mugwort, mallows, pennyroyal, fennel root, and linseed boiled in water. Then, for an injection into the vagina one is to use these same oils together with the marrow of veal bone, hen's grease and yolk of egg. The patient is to eat no salt meat, pork, fish or cheese. After enumerating many other remedies for uterine discharges the author concludes with the statement that all of them should be used with "Divine Blessing"; and that, if so, they will "cure the patients' distempers, confirm their health, and remove all those other distempers

which might otherwise prevent their bearing children." "W.S." praises himself for compressing so much valuable information into the compass of a little book of one hundred and eighty pages, "being willing to put it into everyone's power that has occasion for it, to purchase this rich treasure at any easy rate."

If such were the only books in the hands of the midwives of that day, is it any wonder that the infant and maternal death rate continued high? Aveling¹ tells us that, in the seventeenth century, one baby in nineteen was born dead, and in the eighteenth one in thirty, as against one in one hundred and eight in the middle of the nineteenth, when midwives were doing ninety percent. of the obstetrics throughout England. Harvey, in the seventeenth century, had implored midwives to have patience with a woman in labor, had urged them not to try to hasten delivery by hot drinks, violent pressure or exercise, not to use traction on the cord for removal of the placenta, and above all to be clean in their work. At that time any woman might be licensed as a midwife if she belonged to the Church of England, promised not to neglect the poor for the rich, not to bear false witness, not to produce abortions, not to tell secrets, not to allow any false priest to baptize a baby, and not to maim a child or use witchcraft against it. But even such qualifications seem to have been too high for the average midwife.

That many of the midwives of both Europe and America were justly popular and successful, does not deny that many others were makeshifts hardly knowing enough to summon help in time of need. In *Tristram Shandy*² the midwife was a "widow in great distress, forty-seven years old, mother of three or four small children, decent in carriage, grave in deportment—a woman of few words," etc. She had been engaged at a fee of twenty-one shillings to sit with Mrs. Shandy for several days before her confinement in order to save Mr. Shandy the trouble of riding six or seven miles some rainy night to fetch the doctor when labor had actually begun. This poor, untrained widow had seemed so needy that the parson's wife had found someone in the parish to give her a few lessons in midwifery, which constituted her sole training for her work. With the widow at hand, Mr. Shandy summoned the doctor at his ease, and entertained him with wine until it was time to apply forceps for the delivery. The doctor was so awkward in applying the forceps, however, that he broke the nose of the baby.

¹ Aveling, Dr. J. H., "History of English Midwifery", 1872, p. 89 ff.

² Sterne, Lawrence, "The Life and Opinions of Tristram Shandy," 1759.

A great triad of men were practicing obstetrics in the eighteenth century in Great Britain, William Smellie (1697-1763), William Hunter (1718-1763), and Sir Fielding Ould (1710-1789). To these Denman's name should perhaps be added. All have been the subjects of many biographical sketches. Here it is only necessary to remind the reader that Smellie had studied in Paris with women and under famous midwives, and had improved the Chamberlen forceps by the addition of a steel lock and a more suitable curve, although he had covered the blades with leather to make them seem more like the human hands. He also invented calipers for measuring the pelvis. In 1752 he wrote an excellent book for midwives in English. It had thirty-nine plates and was an improvement on its predecessors.

William Hunter, of Scotland, a great anatomist and a collector of museum specimens of every sort, was a pupil of Smellie; he also used his powers for the furthering of the education of midwives and of surgeons. He published a great atlas on the pregnant uterus, "the incomparable atlas" it was called by his contemporaries. He was the first man-midwife to receive an appointment at the Middlesex Hospital¹ in London. The museum of specimens which he collected is now in Glasgow, while that of his brother John is in London at the Royal College of Surgeons.

Sir Fielding Ould, although without a university degree, was nevertheless a great obstetrician, and a famous teacher of both men and women. He was the first man-midwife to the royal family of England, and he believed only less in the necessity for obstetric forceps than in cranioclasts and hooks. He, like women midwives, was a licentiate in midwifery of the College of Physicians, Dublin, and had had some training under Madame De La Motte in Paris. After Ould became the royal obstetrician, with a position at the Rotunda Hospital in Dublin, such was his fame that he drew students by the hundreds from Paris and Germany; and, despite the uncleanness of his wards, he had remarkable success in his deliveries and a very low mortality. He was in attendance at the birth of the Duke of Wellington and many other aristocratic babies, and was proud of the many bits of doggerel aimed

¹ The Middlesex Hospital, London, had a rule that no *woman* midwife was permitted to act as midwife. Nurses were paid five guineas a year, but after ten years had a pension of two shillings six pence a week for life. It is amusing to us to find that women who had been delivered were held like prisoners with their babies, for fear that they would leave the hospital without their babies, i.e., abandon them permanently to the charge of the hospital.

at him as 'Lord Ould' by his rivals, especially by those who did not countenance man-midwifery. Among the most common sayings, after Ould became a Peer, was one that the common prayer of his admiring women patients was, "Lord, Ould Lord, deliver me."¹

III. SMALLPOX AND OTHER EPIDEMICS

THE gradual change in the character of the great epidemic diseases has already been alluded to. Smallpox was one² of the great scourges of the eighteenth century, though syphilis, typhoid fever, measles, diphtheria and influenza were close seconds. It is said that the mortality ratio from smallpox was fifty per cent., there being 60,000 deaths in one year from that disease. The disease was in fact omnipresent, not less in New England than in England or on the Continent. Louis XV of France died of it in 1774, as had Mary, Queen of England, in 1694. Most of the court beauties, even the Princess Anne, were so pock-marked as to spoil their fair skins. Sir Peter Lyly could make them attractive on canvas only by painting them in gorgeous clothes and leaving out their facial blemishes. Smallpox was such a disfiguring disease, that it was the pitting rather than its infection and high mortality that led people to attempt all sorts of cures. Old women in the country had often found that children who had had cowpox never had smallpox, but this made little impression on city people. Lady Mary Wortley Montagu, a well-educated woman, the wife of the British ambassador at

¹ Witkowski, *"Accoucheurs et Sages-Femmes Célèbres"*.

² Among the diseases that were rampant during the eighteenth century were gonorrhea, which was so prevalent that four hundred books were written on it and syphilis alone. The two were not differentiated before the time of Ricord (1831-1837). (See article by Miriam Bitting Kennedy in the *Journal of the Alumnae Association of the Woman's Medical College of Pennsylvania*.)

William Douglas (1691-1752), for many years the only university graduate practicing medicine in Massachusetts, made a study of scarlet fever and smallpox in New England, which is valuable as a piece of research.

One of the most careful investigators of epidemic diseases at the end of the century was Noah Webster, of dictionary fame. Dr. William H. Welch calls him "the first epidemiologist this country produced." He published a great work on epidemics, and one on bilious fevers, and a criticism of Erasmus Darwin's "Theory of Fevers." His two-volume work on the "Pestilential and Epidemic Disease, Influenza," was written in 1789-1790. He tells us that the disease was particularly prevalent in 1737, and again in 1789; but he disagrees with the great Cullen as to the infection of influenza from person to person, believing that the "morbific agent is carried in the air, and the Lord would never vouchsafe to mortals a knowledge of his ways in thinning the population." This was also the theory of Dr. Rush and his colleagues during the epidemics of yellow fever, for not even by swallowing the yellow fever vomit did any experimenter contract the disease.



ELIZABETH BLACKWELL.
"FLOURISHED" 1737.

(From a print in the British Museum. By permission.)



CHARLOTTE HEILAND VON SIEBOLD,
DR. OBST., DIED 1817.

*(Granted by the University of Gies-
sen "Lauream doctoris in Arte Ob-
stetricia." Kindness of Dr. Mathilde
Salymann of Cannstatt, Germany.)*



MADAME DE STAEL-HOLSTEIN,
1768-1817.

*Harless says: "She combined the
talents of her father in politics
and finance with those of her
mother in social welfare work and
medical science."*



LADY MARY WORTLEY MONTAGU

*The first active propagandist for
inoculation against smallpox by
vaccination.*

Constantinople, when she returned to England in 1722, reported the good effect of inoculations of smallpox made by special women in Turkey, saying that severe attacks were prevented by this means.

Lady Montagu was not a medical woman, but she probably did more for mankind, medically, than most of the physicians of her time. In 1717 she had written to a friend:

"Apropos of distempers I am going to tell you a thing that I am sure will make you wish yourself here. The smallpox, so fatal and so general among us, is here entirely harmless by the invention of ingrafting, which is the term they give it. There is a set of old women who make it their business to perform the operation every autumn in the month of September when the great heat is abated . . . They make parties for the purpose . . . the old woman comes with a nut-shell full of the matter of the best sort of smallpox, asks what veins you please to have opened, etc."

Lady Mary goes on to explain that this woman puts a little of the venom into the opening and binds a hollow shell over the wound. The patient has a little fever for two days, but there is no pitting. The pus was taken from a healthy child on the thirteenth day of the disease, kept in a clean glass vial in the warm breast of the inoculator, and carried from patient to patient. She also said that mothers inoculated their children simply by putting the pus upon the skin and pricking it in with a pin.

As Lady Montagu had had her own children inoculated¹ without bad effects, she was able to induce others of the nobility to try it, and the King allowed Sir Hans Sloane and Dr. Mead to demonstrate its efficacy on condemned criminals, who might thus purchase their freedom. The Princess of Wales ordered it tried on five charity children before trying it on her own children. In 1750 Prince Edward and the Princess Augusta were inoculated, their surgeon, Robert Sutton, carefully preparing them for it by a severely restricted diet for ten days, without wine or meat, and the taking of a powder every third day containing eight grains of calomel, eight grains of compound powder of crabs' claws, and one-eighth grain of tartar emetic. This was the usual treatment of the patients at the smallpox house-parties which became common in England and America, the daily routine of the home being interrupted by this interlude of merriment and rest, for the inoculated infection was gener-

¹ Wortley Montagu (Mary), "Letters of the Right Honourable Lady M***y W*****y M*****e: written during her Travels in Europe, Asia and Africa, To Persons of Distinction, Men of Letters, etc. in different Parts of Europe . . . in three volumes. London, Printed for T. Becket and P. A. De Hondt, in the Strand, MDCCLXIII". This was a surreptitious publication. It was edited by Cleland.

ally mild.¹ Fortunately, since the great fire of London in 1666, epidemics had spread less rapidly, and the death rate from them was not quite so appalling. The poverty among the inhabitants of the cities was, however, still very great; and the equipages of the famous doctors of the medical schools and the club houses were not often seen dashing through the narrow lanes where dwelt the poor. It was women doctors who went about there, giving all the help and comfort possible, and at very little cost to the patient.

Among the other contagious diseases which caused a heavy mortality in this century was puerperal fever. As fast as hospitals for midwifery cases were built they were continuously filled with poor patients, so that filth and over-crowding made them veritable pest houses. Spencer (*op. cit.*) says that such a hospital was built in London in 1739, one in Glasgow not much later, and these were followed by others at frequent intervals. Puerperal mortality, however, continued great. Delivery was effected in beds rather than chairs in these hospitals; but the bedding could not be kept clean under the circumstances that existed; and of course the midwife did not realize how dangerous her unclean instruments and dirty fingers were. Delivery in the homes of the poor could have been no sater than the hospitals, however, for body-lice and bed-bugs were everywhere; and the germs of puerperal fever were easily transmitted.

One encouraging development was occurring. Through the study of contagion an interest in the diseases of children was being created. Walter Harris of Gloucester, a pupil of Sydenham, had written a book on the diseases of children which was very popular early in the century; and in 1769 George Armstrong wrote a book on infant feeding, and

¹ There is no occasion to repeat here the history of Edward Jenner's (1749-1823) introduction of vaccine from a cow, and the final victory over the disease. It is enough to recall that it was in 1789 that he inoculated his eighteen months' old son with cowpox, and then with smallpox, and thus demonstrated the child's immunity from the latter disease. Old Benjamin Jesty had done the same thing in 1774 for his own family; and in 1785 Nash was using cowpox somewhat in his London practice; but it took Jenner to popularize the method, and in 1806 he was given £20,000 by Parliament with which to buy vaccine for the poor. Napoleon, Catherine II of Russia, and many other rulers then adopted this routine for preventing the ravages of smallpox, the virus having been previously blessed in the churches of the Catholic countries. In America the subject of inoculation and vaccination should be forever associated with the names of Cotton Mather, Zebdiel Boylston, and Benjamin Waterhouse. "One fact," said they, "is worth a thousand arguments." Finally, in President Adams its advocates had an able ally. Among the Indians the disease had been especially fatal, the mortality being 95%. The death of Indians, however, had been considered a special providence by Cotton Mather.

opened a dispensary for the diagnosis and treatment of the diseases of children. He was the royal physician during the reigns of Charles II and William and Mary; but despite his influence, it took more than a hundred years to establish the necessity for specialists in children's diseases, and to learn the laws of contagion.

Surgery, naturally, was greatly dreaded; and a surgical patient, or any inmate of a hospital for that matter, must have felt that his life was in serious jeopardy from disease as well as pain. Nobody seems to have had any pity for suffering.

One can not think of the mental agony of the patients or parents of those days without a sinking of the heart. It has been estimated that forty per cent. of all the children died before they were five years old, and that half the population died before reaching maturity, while the maternal mortality, as we have seen, was appalling. Alice Freeman Palmer was once rebuked by her husband for giving so much time to lecturing to "stupid, tiresome women." He urged her to write books and make for herself a lasting monument. She replied, "Books don't help much toward that—they are really dead things; it is people who count, they touch each other, and so you go on working forever." And already, in the eighteenth century, there were a few such pioneers as she, who were working for the uplift of women, trying to stimulate public interest in their behalf. Some were teaching midwifery, a few were surgeons, or eye specialists, or bone-setters. They blew their trumpets too faintly to be heard as individuals; and, as a rule, they were following timidly in the well-worn ruts, beside or behind the average man instead of ahead of him.¹

IV. MEDICAL WOMEN OF THE 18TH CENTURY— GREAT BRITAIN

OF the medical women of England in the eighteenth century the names of a dozen have come down to us through their writings or because of their skill. Elizabeth Blackwell (1712-1770) who wrote "The Curious Herbal"² was considered by James Douglas (1675-1742)

¹ See article by Sir D'Arcy Power in *Social England*, H. D. Traill, Vol. V, pp. 419 ff., 1893-1897.

² "The Curious Herbal" contains 500 cuts of plants most useful in the practice of physick. These plates were drawn, engraved on copper plates, and colored by Elizabeth Blackwell. The book was published in two volumes, folio, in 1737.

to be one of the hundred most famous women of history. Douglas was himself famous as an obstetrician and surgeon as well as anatomist, so much so that his name is almost a daily word among gynecologists. His friendship with Elizabeth Blackwell began in Scotland where she lived with her husband, a physician named Alexander Blackwell, who was a graduate of Aberdeen University, a printer and an apothecary. Elizabeth studied botany and anatomy both with her husband and with Dr. Douglas, becoming so proficient in flower painting and copper-plate engraving that, when her husband was imprisoned for debt in 1737, the earnings from her book paid his fines. When Alexander was again imprisoned, this time for conspiracy against the King of Sweden, she studied obstetrics with Smellie in order to support herself, and soon became a popular and successful practitioner. She won the friendship and admiration of Sir Hans Sloane and the famous Dr. Richard Mead, and like them had a large income. Her husband was finally beheaded for treason, apologizing at the last moment for not knowing just "where to lay his head on the block because it was his first experience," after which tragedy Elizabeth continued her obstetric as well as general practice until her death at the age of fifty-eight. Dr. Elizabeth Blackwell of the nineteenth century regarded Elizabeth, her predecessor, as a type of "physician-accoucheur worthy of all praise."

Another famous English medical woman of the eighteenth century was Mrs. Martha Mears, in praise of whom also James Douglas took up his pen. She was a well educated woman, a friend of Thomas Denman (1733-1815), John Armstrong (1709-1779), and Francis Willis (1718-1807), and an admirer of her predecessor, Smellie, and of their forerunner, William Harvey. She published a little book on gynecology and obstetrics in 1797, in which she gives "Candid advice to the Fair Sex on the Subject of Pregnancy".¹ The English edition, which was very successful, had 161 pages, and was "printed by the authoress, and sold at her house in Red Lion Square, London, and at other places." Martha Mears not only wrote on obstetrics but on the hygiene of pregnancy, for she assures her readers that pregnancy is not a pathological process but a normal function if properly understood, since the nerves, "the sentinels of the body," are beneficent, and fever merely an intangible something, chiefly a "mass of pestilence and mortality in city air."

Martha Mears was no dilettante obstetrician, but a woman of

¹ Mears, Martha, "The Pupil of Nature; or Candid Advice to the Fair Sex", 1797. The chief topics are Pregnancy, Child-birth, and the Diseases incident to both.

culture like Elizabeth Blackwell. Thomas Denman, one of her friends, had recently written his "Introduction to the Practice of Midwifery", which was so popular that by 1805 it had reached its fifth edition. She agreed with him as to the use and application of obstetric forceps, on the contagiousness of puerperal fever, the treatment of hemorrhages from the uterus, and the importance of vaccination. She also admired Francis Willis, who had insisted upon a gentle treatment for the insane King, George III, rather than the heroic applications advised by other physicians. She may well have been a friend of Mme. D'Arblay and Hannah More, for their aims were the same. All were followers of John Armstrong, the poet physician who made a hobby of hygiene, and wrote a poem on the subject.¹ Because of the advanced thinking and the energy of such women as these it became possible for midwives to study with men at the new lying-in hospitals upon the payment of a fee of five pounds. Martha Mears says she is glad "to strain her feeble voice to swell the note of public praise which the men deserve for thus helping women in their medical work."

Martha Mears' little book was soon translated into German by Dr. E. Henschel, who says that no book so good of its kind in any language had been published for fifty years. The German edition has 270 pages.² The author tried to give an earnest seeker after knowledge the most practical advice possible, but to leave out the unnecessary operations and rare anomalies of labor. She may have taken her own teachers, especially Denman, as models. Her subject is divided into eleven chapters, beginning with an urge against trying to hasten labor or to interfere with a normal delivery, and decrying beliefs in astrological signs, or the predictions of would-be prophets of gloom. In the second chapter she insists that a child's ancestry must be healthy if it is to develop normally; and that the mother must practice the laws of healthy living

¹ The title of Armstrong's long didactic poem is "The Art of Preserving Health". Martha Mears quotes his lines on diets, fresh air, regular meals, water drinking, graduated exercises during pregnancy, bathing, temperance in taking wines, moderation in amusements, and sleep. She specially admires the following quotation, from which we may judge her character:

There is, they say, (and I believe there is)
A spark within us of the immortal fire
That animates and molds the grosser frame,
And when the body sinks escapes to Heaven,
Its native seat, and mixes with the Gods.

² Mears, Martha, "*Geburtshelferin zu London, wohlmeynender Rath für gebildete Frauen, über Schwangerschaft und Wochenbette, aus dem Englischen übersetzt und mit Anmerkungen und Zusätzen versehen von Dr. E. Henschel.*" Breslau. 1804.

in order to keep herself in good condition before the baby is born. In the third she advises the mother to cultivate a sunny disposition, read poetry, make music, love beautiful pictures, and beware of giving way to anger or worry, for, says she, "hope is the balm of the soul, and human beings must learn from the birds how to be happy." Then follow chapters on hygiene—fresh air, especially at night, and a house in the country, not near a swamp, being some of the things emphasized. In the fifth chapter she brings in the wonderful mechanism of labor, and the impossibility of foretelling the sex of the baby, or of relieving all the discomforts of pregnancy. She then dwells on the preparations for motherhood, the cause of "breeding sickness," the treatment of swollen legs, hemorrhages, heart-burn and convulsions, and their prevention by copious bleedings; and she shows the midwife how to predict the date of labor. She emphasizes the danger of artificial abortion, particularly after the sixth month; and assures the mother of eternal damnation if she procures a miscarriage.

Chapters nine and ten give rules to the midwife and nurse for the conduct of labor, and its unfortunate delays; the dry birth, the adherent placenta, the ineffectual pains, the lack of breast milk, milk fever and other complications, as well as the bath of the new-born baby, and the milk of a wet nurse. Finally, she devotes twenty-five pages to the care of the baby from the moment of its first cry of pain and fright, through its bathing, clothing, feeding and teething, to its vaccination against the pox, and its weaning. She emphasizes the absurdity of rocking it to sleep, or of wrapping it too tightly in its clothing. Perhaps Martha Mears might have gone into a description of the different presentations of the foetus, as did the French women writers, and given a detailed account of the management of abnormal labor; but, instead, she advises the midwife never to delay in calling a skilful physician when she fears complications or finds unexpected delays in the termination of the various stages of labor. She closes the work with the reflection that if, by means of this book, she should benefit even one patient she would feel richly rewarded for her trouble in writing it.

Aveling tells us that the midwives of this century were generally accompanied by nurses when they made professional visits. The duties of the nurse were to attend to the washing of the mother and baby, to "fetch and carry" for the midwife, and to take charge of the feeding of the patients. The better class nurses were like the monthly nurses of Victorian days, staying with the family for as long a time as they were

required. Nurses and midwives traveled by day or night, by horseback or springless carriage, in all kinds of weather and over bad roads, and generally for trifling fees. Some of the more famous midwives, however, were well paid for their services, traveling in almost royal luxury, and living like nabobs.

There was a Mrs. Kennon who officiated at the birth of George III, in 1738, and who was popular in aristocratic circles. She became sufficiently wealthy from her fees and presents to be able to pay a certain Dr. Frank Nicholls £500 to write a satire against men-midwives with the title "The Petition of Unborn Babes to the Censors of the Royal College of Physicians of London", 1751. It was answered in 1752 by a tract called "A Vindication of Man-Midwifery," showing that there was considerable difference of opinion on the subject. Dr. Nicholls was a scholarly and wealthy man, a lecturer on anatomy at Oxford and London, physician to George II, and the son-in-law of Dr. Richard Mead.

The midwife-royal who ushered George IV into the world in 1762 was a Mrs. Draper. She handed the child over to a retinue of nurses under a Mrs. Finch, who saw to it that he was soon baptized and vaccinated. Mrs. Draper was noted for having few cases of puerperal fever. She does not say why, except that she was especially careful in delivering the placenta according to the rules of patience and cleanliness laid down by Harvey, and did not allow her nurses to go from a fever case to a fresh confinement. It is amusing to find that William Hunter, who was waiting in the palace to assist at the birth of George IV, failed to be summoned and so lost his fee. Nor was a man-midwife present at the birth of the future Queen Victoria in 1819, when the Duchess of Kent "was brought to bed" by a German *accoucheuse*, Charlotte Von Siebold (1761-1859). After that time, however, men as obstetricians became the fashionable rule in England; although Germans, both men and women, both as doctors and nurses, were employed in royal circles. Of the Von Siebolds, mother and daughter, we shall learn more when studying the medical women of Germany.

One of the most picturesque of the English midwives of the eighteenth century was Elizabeth Nihell, the wife of a surgeon apothecary. Although a Protestant, she had obtained a dispensation by royal decree (in 1747) permitting her to study midwifery under Roman Catholic teachers at the Hôtel Dieu, in Paris. There she worked for two years, returning to London to open an office with her husband in the

Haymarket. Somewhat later she found that William Smellie was teaching obstetrics wholly by a manikin; and, as she had assisted at 900 births in the hospital, most of which had been without forceps, she published a vehement diatribe in 1760, not only against forceps but against Smellie. He had incautiously said that women practiced only for money; but Mrs. Nihell showed that he practiced for charity only on his manikin. This figure was made of wood with a copper abdomen. A bladder full of beer served as uterus, and in it a wax doll floated or was twisted and turned by the operator. With this he had taught "nine hundred" midwives his art. She was fluent in her sarcasm and invectives against him and all his instruments, forceps, speculum, hooks, scalpels, lassos, bands and tenacula. She held that women were angels of mercy in comparison with such men as he, with his big arms and hands, his uncouth appearance, his rough manners, and his universal remedies of hartshorn, tincture of castor, and laudanum. She asserted that a good midwife could do better work with her small hands than the most expert man with his instruments. In spite of her strong language her portrait shows a placid, grandmotherly face under a neatly frilled cap. Over her shoulders is a white kerchief smoothly folded across an ample bosom.¹

Several other books on obstetrics were written by women before 1800. One was by Jane Sharp, "The Compleat Midwife's Companion", originally published in 1671 and often republished even as late as 1725. Another was by Sarah Stone, "The Complete Practice of Midwifery", 1737, which was long used as a text-book by teachers, together with that of Smellie. Sarah Stone had studied for six years with her mother and for some months at the Leicester Street dispensary, London, under the patronage of the Duchess of York. Her mother was a well known *accoucheuse* who was able to give her the best of training in the management of all kinds of confinement. Sarah was, unfortunately, a rather short and delicate woman, and she found difficult deliveries too great a strain on her back and arms. She, therefore, retired to a house in Piccadilly to write "The Complete Practice", which she dedicated to the Queen, only taking occasional obstetric patients in consultation with other midwives. As an operator she was very successful, performing craniotomies with a simple pocket-knife, but avoiding the use of forceps and hooks when others, less skilful, might have used them. She tells of

¹ Her book, translated also into French, was called "Treatise on the Art of Midwifery, setting forth various abuses therein, especially as to the practice with instruments". 1760.

one consultation one rainy night, eight miles from London, when she found that the midwife had scratched and clawed at the infant's head until it was almost unrecognizable. Such women she calls "Herods of Society."

Margaret Stephen, another obstetrician who officiated at royal births, was an expert in the use of the Smellie forceps. Her book on midwifery, "*The Domestic Midwife*", was published in 1795, soon after the birth of one of Queen Charlotte's fifteen children. The wife of George III, Charlotte of Mecklinburg, was a German, distinctly fitted for a domestic life. Her confinements were never difficult, but her last three babies died very young; and one at least, the Princess Charlotte, was sadly disfigured with smallpox. Her first son, the future King George IV, born in 1762, was healthy but grew up dissolute. On the day of his father's death he felt so ill that he was said to have been bled 130 ounces! This is mentioned simply as a sample of the usual treatment for even small indispositions, cupping and bleeding being in those days remedies even for grief. Margaret Stephen was herself the mother of nine children, most of whom had been born with the help of the delivery forceps of Smellie.

Among other English medical women was Catherine Bowles, a London surgeon of the eighteenth century, who became famous for her operations for hernia, stone in the bladder, and hydrocele.¹ Her husband was also a surgeon. In her operations for hernia she replaced the gut, cauterized the wound and finally healed the scar with nitrate of silver. For the treatment of hydrocele she inserted a permanent drainage, or used a sort of chemical counter irritant. Her only published work was a reply to Robert Houston's book on ruptures, published in 1726.

Kavanagh tells us of Elizabeth Singer, the wife of Thomas Rowe. She was a poet of no mean ability, he a rich young consumptive. After her marriage in 1710 she studied medicine in order to be able to care for him; and, after his death, she devoted her life and money to the sick poor, like the saints of old.

That at least one woman of this century was a competent eye surgeon may be inferred from the following newspaper advertisement of 1716:

"The Lady Read, in Durham-Yard in the Strand, London, having obtained to a peculiar Method of Couching of Cataracts, and Curing all diseases of the Eyes, by Sir William Read's Method and Medicines, and having had above 15 years Experience, and very great Success in Curing Multitudes of Blind and Defective in their Sight, particularly several

¹ Lipinska, p. 210.

who were born Blind, She may be constantly advised with at her House as above, where the Poor and His Majesty's Seamen and Soldiers may meet with Relief as formerly, Gratis. Note, Sir William Read has left only with his Lady the true Receipt of his Styptic Water, so famous for stopping all Fluxes or Effusions of Blood, and all other of the Medicines he frequently used in his practice, which may also be had at the Place above mentioned." (Sir William Read, an ignoramus, was Queen Anne's eye doctor.)

"N. B. The Lady Read since the Death of Sir William Read hath couch'd several Persons, and one in Particular who was above sixty years of Age, all with very good success, and brought them to perfect Sight."

At least one medical woman of the eighteenth century in England, Mrs. Hutton, practiced general medicine and was widely known for her ability. Since in the use of most remedies there is a large element of empiricism and of faith, it is seldom that the rightful discoverer of a valuable remedy receives recognition for his or her preliminary experiments even though they directly lead to the discovery of a cure. Such a pioneer was "Mother Hutton," a botanist and pharmacist of Shropshire, England, who was the first to discover that wild foxglove, *digitalis*, is useful in the treatment of chronic diseases of the heart. She experimented with the plant until she found how to prepare it to the best advantage, and many famous patients from all over the country found their way to her door to be treated for "heart disease, kidney troubles, and dropsy." One of her most brilliant cures was that of a dean of Oxford who had seemed to be at death's door. Mrs. Hutton kept the secret of her remedy until 1785, when Dr. William Withering, a well-known native of Shropshire,¹ and himself a trained botanist, sought her out, and, after some bargaining, bought her prescription. It contained twelve ingredients, but the most important was the *digitalis*. "Mother Hutton" had found that the plant must be gathered at a certain season and prepared in a certain way; but, as those were the days of strong tasting medicines it seemed wise to combine with the foxglove other bitter herbs, although, as she and Dr. Withering confessed, they were of no importance. In 1785 he arranged for the insertion of *digitalis* in the new London Pharmacopocia, and it has been associated with his name rather than hers ever since.

Although there must have been hundreds of capable midwives and women doctors practising in Scotland and Ireland before 1800,² their names have not been connected with any special kind of work or any

¹ Dr. William Withering was born in Wellington in 1741, and died in the Isle of Wight in 1799.

² A special chair in midwifery was instituted at the University of Edinburgh in 1739. From that time to the time of Sir James Y. Simpson and the modern teaching of obstetrics there were always women students there.

book except in midwifery. And although in Dublin the noted Sir Fielding Ould was drawing students from all over Europe to his Rotunda Hospital, the hospitals in Ireland at that time were condemned by John Howard (1726-1790) as filthy, and the treatment of the sick as inhuman. He found the floors covered with fetid straw, the windows so obscured as to be almost useless, and the food most unappetizing. So far as he reported there was only one exception in all Ireland, and that was a private hospital built in 1720 by a Madame Steevens. She lived in the hospital, and managed the patients herself with the help of her nurses. This hospital was, he said, clean and neat; it was warmly praised by him and used as an example of what a hospital of any kind should be. The Irish people may not have been more ignorant or superstitious than any others, but they were content with their old customs. Delivery of a parturient woman in her home was on a three-legged stool, and the linen was seldom clean. She had no pre-natal care except of a religious sort, or occasional bleedings and purgings according to the indications, and her labor was hurried by all sorts of fomentations and meddlesomeness.

There is a story of a Caesarian section performed successfully in a private home in 1738 or 1739 by an Irish midwife named Mary Donaly, or Dunnally, with a common razor. After extracting the baby she sent for a surgeon to sew the wound, in the meantime holding the edges of the abdominal cut together with her fingers for two hours. The wound healed promptly; the lives of mother and baby were saved; and yet Spencer (op. cit.) calls this midwife "ignorant." It hardly seems possible that a woman totally ignorant of anatomy and surgery could have acted so wisely, even though she may have neglected to have needles and thread in her obstetric bag. Evidently, also, Mary Donaly did not endorse the views of the Church that, if a labor could not be terminated normally, the mother's life should be sacrificed rather than that of the child. Or perhaps it was to save the life of the child that she operated.

V. QUACKS AND CHARLATANS

IT would be hardly fair to leave the subject of the medical women of England in the eighteenth century without introducing some of the famous women impostors of the period, women who vied with its greatest men charlatans and quacks. Without mention of Mrs. Mapp and Jane Stevens some of the spice of life would be lost, and the picture would be

left distorted. If we had been in Lincoln's Inn Fields one day in the middle of the century, we would have seen a comedy played to a hilarious audience, whose characters were copied from contemporary medical men and women notorious for their wealth and pomp. This play was called "The Husband's Relief, or the Female Bone-setter and Woman Doctor." In it occurs the following song:

You surgeons of London who puzzle your pates
To ride in your coaches and purchase estates,
Give over for shame, for your pride's had a fall,
And the doctress of Epsom has outdone you all.
Dame Nature has giv'n her a doctor's degree,
She gets all the patients and pockets the fee.

This "doctress of Epsom" was a Mrs. Mapp, the daughter of a Wiltshire bone-setter named Wallin, from whom she learned her trade. She was strong of muscle, fat of body, and masculine of face, and so frequently drunk that she went by the name of Crazy Sally of Epsom. She haunted fairs and shows in order to draw trade from quarrelsome drunkards. The *Daily Advertiser* of July, 1776, says, however, that "she set bones to admiration;" and, through the fees exacted from her patients, she was soon able to ride in an expensive carriage with servants in livery on the box. Becoming famous, she was continually in demand by the aristocracy whenever there was a broken bone or a sprained joint. Even Sir Hans Sloane was so impressed with her skill that he asked her to tend his niece, "whose back had been broken nine years and stuck out two inches." Hogarth puts her in the top center of his "Consultation of Twelve Physicians", all of whom seemed to him to have less intelligence than their gold-headed canes. In this scene Mrs. Mapp wears a harlequin jacket, and she holds a humerus instead of a cane; the periwigs of the men are equalled by her preposterous hat, and the center of the stage is held by a flask of urine, concerning which the twelve big-wigs are holding some sort of consultation. This picture was drawn about 1760, when all the characters in it were still alive and well-known. On either side of Mrs. Mapp are two notorious but wealthy impostors, "Spot" Ward, a pill dispenser, immortalized by Pope for his gilded pills, his paste for piles, and a liniment of camphor and pepper, which were his stock in trade; and Taylor, the son of a widow apothecary, who had become an eye specialist, sufficiently famous to be employed by Pope Benedict XIV, King George III of England, Augustus III of Poland, Frederick V of Denmark, Frederick Adolph of Sweden, and Händel the musician. The two men were clever enough to die rich: Mrs. Mapp, through her drunken habits, died a pauper in 1784.

Jane Stevens was an impostor of a different type.¹ Vulgar and ignorant, she was nevertheless picturesque, understood the tricks of notoriety, and had the courage and wit to keep herself before the public. During the first half of the eighteenth century men suffered much from stone in the bladder, and they naturally dreaded the extremely painful operative methods of the day. Jane Stevens conceived the idea of making a pill to dissolve the stones, for which she concocted a mixture of soap, calcined snail and egg shells. Properly advertised, it sold rapidly. She kept her formula secret until she had become fabulously rich; then sold it to Parliament "at a bargain" for £5000 "so that her remedy could be given to the poor." With her pills she sold a decoction of herbs, honey, burnt swine's cresses, etc. to be taken almost continuously. Jane lived like a princess. Her pills were praised by the best physicians in Europe and America. Benjamin Franklin, who was in England at the time that Parliament was discussing their purchase, was at first impressed, but later, when he found that they were merely "a salt of lye mixed with oil of turpentine which must become changed in its passage through the stomach and bladder," he came to the conclusion that nothing could "possibly dissolve stones at that distance." Stephen Hales, one of the greatest scientists and physiologists of his time, published a pamphlet in 1741 extolling the value of Jane Stevens' pills, seeing no reason for not believing in them.

Perhaps not much actual harm was done by the soap solvents of Jane Stevens and the osteopathy of Mrs. Mapp. St. John Long, on the other hand, advertised a remedy for skin diseases and cancer which was composed of acetic acid and turpentine and caused disfiguring burns. But Elisha Perkins' "tractors" were not harmful, even though they robbed people of their money under false pretenses. They were simply wooden sticks, covered with gold and silver foil, and packed neatly in a plush lined box. They sold as a magnetic cure for rheumatism at \$25 a set.

The remedies of John Coakley Lettsome, or I. Lettsome, a Quaker doctor of the second half of the century (1750-1815), were simply those everywhere in common use, the only difference being that he used them without rhyme or reason. Said he,

"When patients comes to I
I physicks, bleeds, and sweats 'em,
Then—if they choose to die,
What's that to I,—I lets 'em."

¹ Jeaffreson, J. Cordy, "A Book about Doctors", 1861, p. 283.

Lettsome's income was from £5,000 to £12,000 a year, but with it he gave liberally to charity. He founded the first dispensary in London in 1770. In 1773 he organized the London Medical Society. He was a friend of Jenner, and Benjamin Franklin. They believed in his sincerity and medical skill; possibly he believed in it himself.

No doubt there were many impostors among the midwives, women far removed from the type of Elizabeth Blackwell, Martha Mears, Mrs. Nihell, and the Von Siebolds. In a book of Howard W. Haggard, "Devils, Drugs, and Doctors", the frontispiece shows this worst type of midwife. Her whiskey bottle, her lantern, her voluminous wraps, all testify to her common vulgarity.

VI. EARLY AMERICAN WOMEN PRACTITIONERS

IT could hardly be expected that medical diagnosis and care in the American colonies during the eighteenth century would be equal to that of Europe. The "expectant treatment" of those days had only too often a fatal ending. The *vis medicatrix naturae* did its best for the patient; but the odds were against the cure of any really serious disease, or the prevention of epidemics. There were a few trained physicians and many self-taught healers, besides the clergy—those "angelical conjunctions of medicine and divinity" of whom Cotton Mather wrote—and such faithful midwives as had not yet been relegated to the shadows. The physicians in the main were followers of the European schools. They believed either in Hoffman's theory that the nervous system was the root of all evil, or in the "animated molecules" of Brown, or in Haller's "muscle irritability;" but, whatever their "school," their treatment—by bleeding, purging and blistering—was substantially the same for all diseases. Before 1762 there were no medical schools in America, no medical journals, few hospitals, and fewer laws controlling medical practice.

The diseases that carried off the Puritans were variously described as putrid fevers, malignant sore-throat, bladders in the wind-pipe, consumption, raging smallpox, and influenzas. Children were treated for rickets by bleeding their feet, or by holding them under cold water,¹ or by dipping them into ice-cold salt water. Anodyne necklaces were hung around the necks of babies to facilitate teething. Some of these were made of dried berries, others of wolf's fangs. Sugar was given to children

¹ Earle, Alice Morse, "Child Life in Colonial Days."

occasionally; but a ship that brought eighty boxes of rock candy also brought one hundred boxes of Turkey rhubarb and ten of senna. Rum and saffron were given for a chill, and cherry syrup and Venice treacle for a cough. Some of the early American divines did some original experimentation in medication. Bishop Berkeley in 1728 had come to the conclusion that a mild solution of tar water contained all the properties necessary to make it a universal remedy for all diseases. His receipt was one quart of tar steeped for forty-eight hours in a gallon of water and then dissolved in a hogshead of rain water. At the same time a Dr. Atkinson of Salem, Massachusetts, was using a "perfume" of angelica root in white wine vinegar as an antidote to the plague.¹ He also used the old remedy of roasted and ground toads.

There was a Dr. Morse of whom the anecdote is told that his wig was by mistake dusted with gunpowder by his servant, instead of hair powder, and that thereafter, as he was bending over a bed-ridden patient by the light of a candle, the wig caught fire and exploded with such a bang that the frightened patient jumped out of bed and was at once cured.

Fees for medical attention in those days depended upon the cost of the medicine, plus from six pence to a shilling for the visit. Cupping and bleeding and the "teas" or pills were listed separately, and sometimes were very expensive. Neighbors took turns in watching by the sick, but this was generally for the sake of the opportunity to pray the dying into heaven, or, as Judge Sewall said, "to give them a lift heavenward." Alice Morse Earle tells us that sometimes the patient rebelled against being converted or hectored to confess his sins until his strength gave out; then he was supposed to "die saved." Abigail Adams, while splitting wood to boil her kettle, fumed at the limitations in the daily intellectual life of the women of her day, and their domination by men. "The Yankee," said she, "rubs badly at the junction of his soul and body," meaning that he was not truly sincere in his religion; and the "women look as if they were homesick for heaven while making pen-wipers and wash-cloths for the Indians," when they might be "really useful," not only in their homes but outside as well, especially among the sick.

The better class of colonial women were mentally keen and resourceful. They not only did all the work inside the house but much of the gardening and considerable of the rough work outdoors. In New England if they owned property and belonged to the Congregational

¹ Earle, Alice Morse. "Customs and Fashions in Old New England".

Church, women might also play a small part in politics. The gathering of herbs and the preparing of medicines was also woman's work; and those married women who superintended cases of confinement were evidently keen and trustworthy. Of a woman teacher, a certain Anne Kay, Judge Sewall, in 1715, wrote, "She was a good woman and a school mistress and died at the age of 74." Many a non-medical but intelligent woman carried on, or helped to carry on, "general stores," which sold drugs as well as foods and clothing. After Benjamin Franklin had organized an official post office system these "stores" were the common meeting places for the towns. Not until post-revolutionary days were laws enacted against the promiscuous making and selling of medicines by men or women.

Of the New England midwives Mary Putnam Jacobi wrote:¹

Midwives did confinement work in the American colonies almost

¹ Meyer, Annie Nathan, "Woman's Work in America", 1891. Article on Women in Medicine by Mary Putnam Jacobi, pp. 140 ff.

"The same centuries of tradition which had, officially, reserved the practice of medicine for men, had assigned to women the exclusive control of the practice of midwifery. It was assumed that midwifery did not require the assistance of medical art,—that the woman in labor traversed a purely physiological crisis—and required only the attendance of kindness, patience, and native sagacity, all obtainable without scientific knowledge from her own sex The limitation of sex . . . was decided by a tradition so immense as to be mistaken for a divinely implanted instinct, intended by Providence as one of the fundamental safeguards of society and of morals . . . But when the necessity for knowledge was recognized, when men became skilled while midwives remained ignorant,—the choice was no longer possible; the greater decorum of female midwifery was obliged to yield to the greater safety of enlightened masculine practice.

"The history of medical women in the United States . . . may be divided into seven periods," the first two of which are as follows:

"First, the colonial period of exclusively female midwifery, many of whose practitioners, according to their epitaphs, are reported to have brought into the world, one, two or even three thousand babies apiece . . . During this period of female midwifery, the medical profession proper of the colonies remained entirely unorganized and inarticulate. Without making special inquiry, a superficial observer could have almost overlooked the existence of doctors, as a special class, in the community." Dr. Jacobi adds,

"There followed, however, a *second* period, that namely of the Revolution, and the years immediately preceding and following it. During the former, physicians began to travel to Europe for instruction. During the Revolutionary War their public services in the military hospitals, though apparently not very useful to the sick, yet served to bring the profession, for the first time, out of obscurity; and the opportunities afforded for the collective observation of disease on a large scale first breathed the spirit of medical science into the American medical profession. The first achievement of the new-born interest in medical art and education was the expulsion of females from even the outlying provinces of the profession, and from their world-old traditional privileges as accoucheuses."

without competition until the arrival of John Dupuy in New York (d. 1745), and Shippen (1736-1808) and Morgan (1735-1789) in Philadelphia. When Dupuy died, a Dr. Attwood took his place, completely eclipsing "Granny Brown," although she had been very successful and charged much less than he. Medical education was then in the hands of private physicians who generally scorned to teach women; but a new school of midwifery was opened in Philadelphia between 1762 and 1768 by Shippen¹ and Morgan. This became the forerunner of the University of Pennsylvania. It was said that, if "women had been willing to own their ignorance and apply for admission," they might have been allowed to register, at least for the midwifery courses, but no one did apply. As early as 1755 Benjamin Franklin had suggested plans for a college for the study of all scientific subjects, but could then arouse no interest in the undertaking.² By 1776 there were 335 doctors in the colonies, one-tenth of whom had European degrees, while 51 were graduates of the Philadelphia school and of King's College in New York (founded in 1767).³ Queen's College, now Rutgers, also had a medical school for a short time, and the Harvard medical school was opened in 1782 by Dr. John Warren. There were few public hospitals in America in the eighteenth century. The first was in New Orleans in 1720; but Philadelphia had one in 1756, and New York in 1791. The requirements for graduation in the earliest medical schools were the completion of two years' study with a reputable physician, two short terms at the medical school, and the writing of a thesis.

The opening of medical schools in America definitely separated the study of theology from medicine, and also definitely excluded women and barbers from medical degrees. Thus, says Dr. Jacobi, "the able midwives were suppressed along with the rank and file of uncultured women." Women with no particular education could not compete with men who had opportunities for attending lectures, witnessing autopsies or dissecting bodies, even though their soothing herbs, lotions and poultices might have been less harmful than the wholesale bleeding and heroic medication of the graduates of the new schools. Whether women were among the early advocates of inoculating against smallpox we are not told; in any event six times in the eighteenth century smallpox almost devastated the country.

¹ Shippen opened a private maternity hospital in Philadelphia in 1762.

² In 1753 the Connecticut legislature went on record against "educating men" for anything but the ministry.

³ The first medical degree was granted by King's College in 1770.

In discussing the medical history of the seventeenth century we mentioned the interesting medical notes to be found in the diaries of Judge Sewall (1674-1729).¹ In 1710 he tells us that one of his daughters was taken sick, and we find that a woman was called to attend her as well as a man, for, he says, "neither Dr. Noyes nor Mrs. Baily could save her life." The chief sources of information concerning the midwives of this century are, however, the tombstones in the old burying grounds, town or county annals, and old newspapers. From the annals of Dorchester we find in 1705 the announcement of the death of "Old Widow Wiat", aged 94, who was said to have assisted at the birth of more than 1100 children.² From the Charlestown records, in 1718, we find that Mrs. Elizabeth Phillips had arrived from London, at the request of the Lord Bishop, to attend the midwifery cases there. She died in 1761, having brought into the world above three thousand children. In the *Essex County Gazette*, July 14, 1772, Mary Bass announces that she has left Boston and settled in Salem to pursue her business as midwife because "men midwives were fairly numerous in Boston." She had studied with "some of them", and until the Revolutionary War her advertisement was frequently in the paper. (Dexter, p. 67). In Nantucket there was a doctor Mary Barnard in 1749, to whom the Rev. Timothy White paid £5 for "advice and physick". In Marlboro, Vermont, Thompson, the historian, tells us that "in 1763 Mrs. Thomas Whitmore, a pioneer settler, was very useful both as nurse and midwife." She possessed a vigorous constitution and frequently traveled through the woods on snow-shoes, by night or by day, to relieve the distressed. She lived to the advanced age of 87, and "officiated as midwife at more than two thousand births and never lost a case"—certainly an enviable record.

In Maine there is record that in the seventeenth century (1646) a man, Francis Rayns, was prosecuted for practicing as a midwife. The people of that state were very particular about the morals as well as the medical practice of their midwives and doctors. In 1645 the General

¹ *Collections of the Massachusetts Historical Society*, vol. 5, "Diary of Samuel Sewall", 1674-1729, in 3 vols. See Chap. 9.

² "Colonial Women of Affairs Before 1776," by Elizabeth Anthony Dexter, 1924, p. 61. Women in the eighteenth century undertook all medical specialties, and all kinds of commercial affairs from horse-shoeing and the making of soap to the preparation of food, beer, and medicines. From this book is quoted the following advertisement, which appeared in the *Boston Evening Post* for March 28, 1748: "Hannah Chapman makes and sells a Smell in Mixture, that will cure the Itch or any other breaking out, by the Smell of it. Enquire for me at the Sign of the Stayes at the Head of Seven-Star Lane."

Court of Saco ordered that no "wimmin" should live on the Isles of Shoals, as being too dangerous; and that no lazy people should be tolerated anywhere, twenty lashes on the bare back being the penalty for idleness. Prayer was the general remedy for sickness, and Indian medicine was sometimes employed after the Indians had been converted. A Mrs. Elizabeth Olds is mentioned as a woman who was "kind to the sick and those in pain." She died in 1782, aged 92, and "had 286 descendants."

In Connecticut, the daughter state of Massachusetts, there were many very able midwives, and the standard of medical skill was high. Many towns have traditions of women doctors long before there was such a thing as a college for them, but the names of most of them have been lost. A Mrs. Allyn was an army surgeon during King Philip's War, and at one time received £20 for her services. There was also a Sarah Alcock, the wife of a "chirurgion," who was "active in physic;" and a Sarah Sands, who was the Block Island doctor for many years. One woman in Winsted had so large a surgical practice that she employed an apprentice whom she sent on certain errands. Once, at least, she sent him to Middletown to set the broken thigh of a British prisoner, for which she charged "£4 lawful money." Among her other charges we find "four visits and dressings, 10 shillings; three visits and dressings, seven and sixpence"; and the bill totals £3, 4-6. In Torrington in 1773 a Mrs. Jacob Johnson, known as "Granny Johnson," and a Mrs. Huldah Beach were honored for their skill in obstetrics. They traveled long distances on horseback through the trackless woods among the hills of the northern part of the state and were universally beloved.

It is interesting to note that, among the women accused of witchcraft in New England, there was the name of but one medical woman or midwife, Margaret Jones. It is supposed that the charges against her were not sustained for she was not punished in any way. It is astonishing that Anne Hutchinson, with all her religious fanaticism, was allowed to escape. It was thought to be a part of the scheme of Divine Providence, however, that she was killed by the Indians. For a long time women who studied religion or medicine with men for teachers were under the ban of society. By 1810 most of the New England midwives had been forced back into their homes, men having taken over their practice.

In New York, however, midwives were licensed long after 1760, if they could pass an examination "by the Faculty" or "by several gentle-

men of that Profession." Mrs. Sarah Ridgely of London, a widow, had such a license, and advertised her recommendations and her "willingness to attend those Ladies who may please to favor me with their commands." There were still also some old midwives who had been certified years earlier on the sole oath "to be kind to the poor as well as to the rich, and not listen to lies as to the father of a baby, nor conceal the birth of bastards, nor produce miscarriages, nor operate needlessly on any women."¹ These women were frequently honored guests in a home, and sometimes a banquet was given for one who had officiated in a particularly satisfactory manner. In the *New York Gazette* for March 13, 1739, is the following: "Mrs. Mary Hazard of Newport died at the age of 99 years. She was accounted a very useful gentlewoman both to the poor and rich, and particularly among sick persons, for her skill and judgement which she did gratis."

There were also many women in the eighteenth century who both prepared and sold drugs, and who sometimes also administered them. Some of them were mere beauty specialists; but others like a Mrs. Edwards of New York in 1736, and the Hannah Chapman previously mentioned, "healed deformities" and skin eruptions. *The American Mercury* for July 1, 1731, advertised Mary Bannister's "Drops of Spirit of Venice Treacle." And there were Ann Tatnall's Powders, famous in 1774; and Sarah Murray's Tar water, 1748; and Catherine Denner's Remedy for Scald Head sold at the sign of the Comb, 1754; and her remedy for "Gravel and Pain in the Back." There was also a Hannah Pearson, who advertised to cure scald head, and a Nurse Tucker, who "could cure pimples and toothache, and had remedies for many common diseases."

In Philadelphia also there were many such pill vendors, who did a good business. Some of them sold every sort of commodity from eyeglasses and physic to food and clothing, in "general stores" which were much like the drug stores of today. The Widow Mankin, in Market Street, 1734, advertised as follows: "Lately arrived, a select Parcel from London, consisting chiefly of such things as are used in the modern practice of Physick, being a great variety of *Materia Medica* both simple and compound, both Chymical and Gallenical."² Lydia Darragh, in 1776, "a practicing doctor," announced that she had healed at least one man whom three or four famous doctors "failed to relieve." She

¹ Haggard, *op. cit.*, p. 70.

² Dexter, *op. cit.*, p. 29.

then turned her talents to the undertaking business and lived at "her husband's Inn." She was an Irish woman; and during the Revolutionary War was a clever and notorious spy.

Still further south we find the mother of William Lloyd Garrison supporting her little children in Baltimore by midwifery, while trying at the same time to abolish slavery and emancipate women.¹ It is said,² moreover, that the first well educated woman doctor in America was a Mrs. Frances Coomes, who practiced in Kentucky. She was said to have been a woman of vigorous intellect, great originality, fertility of resources, and strength of character, and her fame as a surgeon, physician, and obstetrician extended beyond the limits of the state. In those days, in Kentucky, medicines cost huge prices—\$240 for eight doses of calomel, \$240 for four blistering plasters. Such prices lead us to wonder what Mrs. Coomes' income was, and what was the original cost of her foods and drugs, also how pioneers could pay such bills for medicines. Perhaps these prices are from one of the periods after the Revolution when the currency was temporarily very highly inflated.

Dr. Elizabeth Bass, of New Orleans,³ has found records of many a midwife in old Louisiana during the eighteenth century, when most of the territory of the Gulf States belonged alternately to France, England, and Spain. New Orleans was French, however, for most of the time before it was ceded to the United States in 1803. As early as 1703, says Dr. Bass, the French Minister to the Colonies sent to Quebec for a midwife, so great was the need of expert help in obstetrics. The Bishop of Quebec replied by sending the "daughter of Madame Durany," who arrived at New Orleans on board the *Pelican*, January 20, 1704. Her salary was to be 400 livres a year. Four years later the governor, Sieur de Bienville, was forced to admit that Marie Grissot, a midwife, could not be compelled to nurse soldiers, a task for which she had no liking and which she obstinately refused to undertake. Her objection was that, since many of them had scurvy, she might carry the disease

¹ The first known physician in Baltimore was a Charles Frederick Wiesenthal, who settled there in 1755. He was army surgeon and the chief of the medical staff during the Revolutionary War. He boasted of his ability to cure erysipelas, gout, and convulsions. There are traditions, however, of a certain Buckler Partridge who antedated Dr. Wiesenthal; but his remedies were centipedes, juleps of goat's blood, frog spawn, powdered bees, etc. The centipedes were to cure jaundice.

² "Pioneer Medical Men and Times in Kentucky," by John A. Ouchterlony. *Johns Hopkins Hospital Bull.*, 1890, vol. 1.

³ Dr. Elizabeth Bass is professor of clinical pathology at Tulane University. Her material should be published in full.

to her midwifery cases. In 1724 the record shows that Bienville was again appealed to by a midwife named Marie Jeanne Salmon Dauville, who was apparently also a teacher of midwives, asking for the removal of one of her assistants, a woman named St. Germain, who was apparently incorrigible, in favor of a woman named Moreau, the wife of a locksmith, who was "intelligent and prudent." This petition was also granted. Ten years later the salary of a midwife was 800 livres; and in 1756 Mme. Faguiet, the successor of Mme. Dauville, asked for a bonus in addition to her salary. At that time every physician, surgeon and midwife was obliged to pass an examination before being licensed to practice. In the case of Mme. Aube this examination is specifically mentioned, but not the names of the examiners. Mme. Marberret of Chalons, Mme. Cadeau of Lyons, and Mme. Marchadie, were said to have been examined by a committee of six physicians appointed for the purpose (1722-1723). The diplomas of these women, as well as those of several other midwives, had come from the University of Paris, and from Bordeaux, Bayeux, Heidelberg, Freiburg, Stuttgart, Würzburg, one from the Westminster Hospital in London, two from Dublin, and one from the Medical College of Havana. Concerning Mme. Marchadie it was voted that "she not be allowed to terminate labor before the arrival of a physician," showing she was classed as a nurse or inferior midwife rather than as a skilled obstetrician,¹ and showing also, by inference, that there were women midwives who were deemed fully competent.

There was a hospital in New Orleans in 1720, under the care of the Ursuline Sisters like that in Quebec. The Minister of War had written to a convent in Arras to ask if Sister Angelique Lielle might perhaps be capable of managing a hospital. Evidently she was found not only worthy but willing to undertake the long journey from her home. Perhaps she brought a few nurses with her, for from 1720 to 1742 there are several references to the hospital school of the Ursulines in New Orleans, and we recollect that there was such a school in Paris, where women were taught to do surgical work and allowed to perform operations. In 1739 some of these nuns were evidently qualified to act as apothecaries, and to raise or gather herbs and prepare medicines. It is not strange that, among these immigrants, there were well educated midwives and pharmacists, for Marie Louise Lachapelle and Madame Boivin and other noted European teachers were at this time insisting on the most thorough training for midwives.

¹ These facts are taken from the "History of the Mississippi Valley to 1803", by Mrs. W. N. Miller Surrey, Carnegie Institute of Washington, 2 vol., 1926.

VII. THE 18TH CENTURY—FRANCE

WE have found French women taking a prominent position in medicine in every century since the days of Charlemagne. The eighteenth century was no exception although France was not keeping up to her former reputation in medical science, and although the lower classes were illiterate and desperately poor, and the rich profligate and heartless. Class hatred blazed into wars both at home and abroad, and the condition of women was particularly difficult. Under the rule of Louis XVI (1754-1793) few girls of the lower classes were taught even to read, and they could earn no more than five or six cents a day. Although they were not actually treated as slaves, like the girls in Austria, their subjection was so intolerable that they at last rebelled with all the ardor of youth. Men of all classes were opposed to the education of women, saying that nature's laws designed women for home making and bearing children. The Church reiterated its old commands against public life for women; and, with no leaders, the mothers and children of the poor were kept in ignorance, superstition, and hunger. When they did rebel nothing could stop them.

There was a brighter side, however. Both before and after the Revolution there were, among the aristocracy, some cultured men and women, who, even if not interested in political and social reform, could discuss the paintings of Watteau, the sculptures of Houdon, and could appreciate the newest medical and scientific literature. Taine says that they eagerly attended lectures in natural sciences and they watched scientific experiments with pleasure. In 1768 some of them obtained permission to "assist" at courses at the Collège de France;¹ and, while there were dilettanti among them, there were also many who were serious. Among them were some particularly interested in medicine.

Mme. de Staël Delaunay (1693-1750) (not the well known literary woman of fifty years later) was such an expert anatomist that she was called by her colleagues "that daughter of France who best understands the anatomy of man." Mme. Geneviève Charlotte d'Arconville (1720-1805) was another great anatomist, as famous among scientists as

¹ Anne Charlotte Causire, at the age of thirty-three, was allowed to register at two sessions of the School of Surgeons in Paris. Why we hear only of Anne it is difficult to tell. Baudelocque said that she was one of the five women in his class at the Hôtel Dieu, and was a brilliant pupil in midwifery. She had begun her studies with her mother, who was an expert midwife without any public training, and her experiences must have given her an unusual background.

Lavoisier. She also wrote on chemistry, medicine, natural history and philosophy, a three-volume life of Marie de Médicis, and one on the life of Francis II, the husband of Mary Queen of Scots. In 1759 she translated and published Shaid's "*Leçons de Chimie*", and Dr. Alexander Monro's "Osteology" in two volumes, with beautiful illustrations from the cadaver, drawn under her direction. In the midst of her dissections,¹ she found time to write a study of putrefaction, and of the thirty-two classes of substances—animal, vegetable, and mineral—which cause or hinder it. For the second part of this work she made considerable study of the action of weak and strong acids on human bile and beef bile. Her work gave her high rank among her contemporaries, and her name should be kept alive along with those of the other chemists and anatomists of her century.²

Among other French women anatomists were Mlle. Bihéron, born in Paris in 1730, who became a teacher of John Hunter and of many other famous anatomists. She was of Anglo-French extraction, "poor but earnest in her studies." When, in 1771, the Crown Prince of Sweden visited Paris, Mlle. Bihéron and Lavoisier were both invited to lecture before him at the Royal Academy of Sciences. She was then forty-one years of age. She made models of human anatomy, like those of Anne Morandi Manzolini of Bologna, but of more permanent material than wax or clay. She kept the formula of this material a secret, preferring to sell the models rather than it. Eventually Catherine II of Russia bought the entire set. It was said of them that they were in every way perfect, except only that they lacked the smell of their originals!

Among the other noted medico-scientific women of France in the eighteenth century, six at least were remarkable for their political interests as well as their medical education. One of them, Mme. Roland, paid the death penalty in 1793 for her opposition to the new revolutionary government. Her maiden name was Manon Jeanne Phlipon. She married Roland de la Platière, one of the advisers of Louis XVI, and

¹ Lipinska, op. cit., pp. 187, 190-195.

² Among the titles of her medical works are the following: "Description of the Movements of Systole and Diastole of the Heart"; "Description of the Lacteals"; "Observations of M. Richard Halle on the Maxillary and Salivary Glands"; "Observations in Extraordinary Surgical Cases"; "Ulcers, Fistulae, etc."; "Fracture of the Head of the Femur"; "Colonic Hernia"; "Bones and Periosteitis"; "A Tumor in the Loins of an Infant"; "A Foetus *in situ* Forty-six Years"; "Muscle Fasciae"; "The Plague in Constantinople"; "On Diseases of Cattle"; "On the Operation of Certain Medicines"; "On a Young Boy who Lived a Considerable Time without Food". There were sixteen titles besides her great work on Monro's "Anatomy," etc.

was active as a friend of the poor against the oppressions of the rich. She studied "simples"; and, as the routine treatment of disease then accepted seemed to her unscientific, she carefully investigated the properties of certain herbs and tested their effects on the human body, with the result that she learned quite scientifically to prescribe for her neighbors and their children. Soon patients came to her from "a distance of six leagues", and crowded her house for medical treatment. She wrote a book on the care and training of children, with special reference to what we now call child psychology. But, despite her charity and interest in philanthropy, she was misunderstood, imprisoned, and guillotined soon after the beheading of the King and Queen. Her husband in sheer despair immediately committed suicide. To Madame Roland is attributed the saying, "O Liberty, what crimes are committed in thy name!"

Another of this medico-scientific sextette was Madame Tallien, who, in 1791, was giving all her time and resources to furthering the vocational education of girls so that they might become social workers, nurses, and teachers. From her aristocratic home she went about addressing the humblest people of the alleys, begging girls to throw off their lethargy and learn to work for community betterment and for public health. Nothing lasting, however, came from her efforts. Mme. Fouquet, early in the century, had tried to accomplish the same educational uplift of girls, and her book of "Medical Secrets" was often reprinted. She had insisted that women should first study anatomy in order to understand their own human bodies, and then study the body politic.

Yet another famous woman of the pre-revolutionary days was Madame Rébours, "a modest mother of Auvergne," who, in 1784, prepared a useful book for women on the care and training of children. In order to lower the rate of infant mortality she advocated the use of mother's milk as the best food for babies, lacking which she gave formulae for prepared milk foods. Her book was in simple language. On the other hand, an equally intelligent woman, Madame Foucheret, pointed out that, unless mothers could get suitable food for themselves, they could not nurse their babies. She therefore used her wealth to take children from unsanitary homes and foundling asylums to her own estate in the country—eighty babies at a time slung in cradles in covered wagons, to be fed on goat's milk and good vegetables.¹

¹ But after all, she found that as many babies died in the country as in the city, and it was decided that babies need mothering and petting as well as good food, and therefore they took the remaining babies back to their mothers. By feeding the mothers with better food the mortality of babies was lessened, as the secretion of the maternal fonts increased in quantity and quality.

The story of the life of the last of these six medico-social workers, Susanne Naaz, Madame Necker, would fill many volumes. She was born in Geneva, Switzerland, in 1740. When quite young she married Jacques Necker, a rich banker, French minister to Switzerland, one of the wisest philanthropists of his day. In order to carry out a plan to reform one of the Paris hospitals she studied medicine and architecture, and in 1778 began her project of transforming an old Benedictine convent into a sanitary and comfortable hospital of 120 beds.¹ She proved that the best of medical and nursing was really no more expensive than the slovenly care which she wished to suppress. This cost amounted to what would now be seventeen cents a day per person. The Hôpital Necker still stands, and is in constant use in the Rue de Sèvres. It not only kept her name alive, but saved the lives of thousands of women who could not have survived the horrors of the old Hôtel Dieu. She then built another small hospital, in which she might continue to experiment as to costs of upkeep, food, and other expenses. In 1790 she wrote a little book in which she dwelt on the danger of hasty burials, and still another on the history of the charity hospitals of Paris. In 1794 her husband lost his position and almost lost his head; finally they were exiled to Switzerland, where Madame Necker died a few months later, eight years before her husband. Their daughter was Madame de Staël Holstein, the writer.²

Mention should also be made of the Marchioness du Chastelet, friend of Leibnitz, Voltaire, and Sir Isaac Newton, who wrote a remarkable book on physics and philosophy, published in 1741. There was also a botanist, the Marchioness du Bonnavy, wife of the French Ambassador to Berlin who, according to Harless (p. 238), was the author of a book on herbs.

Notwithstanding the advances that were being made in scientific medicine, in France as in other countries, through the use of the stethoscope, microscope, clinical thermometer and obstetric forceps, the general position of medicine was scarcely higher there than in the seventeenth century. If we deplore the medical treatment which such monarchs as

¹ Necker, Madame, "*Mémoire sur l'Établissement des Hôpitaux*," 1790. Also "*L'Hospice de Charité, les Institutions, Règles et Usages de cette Maison*", 1780.

² Anne Germaine Necker, Baroness of Staël-Holstein, was born in Paris in 1768. Her husband was the Swedish Ambassador to Paris. It is said that Anne Necker was a "glowing meteor among literary women, combining the talents of her father in politics and finance with those of her mother in social welfare work, and medical sciences. She wrote several books on sociological studies, and one psychological romance, "*Corinna*." She died in 1817.

Louis XIV (1638-1715) and Louis XV (1710-1774) received, we may well shudder at the treatment given to the lower classes, although possibly even a policy of systematic neglect was better than one of "letting" quarts of blood on every occasion. Since treatment was substantially the same for all diseases, few doctors, men or women, thought it worth while to study and differentiate their cases. They still thought that pulse and urine, tongue and skin told the whole story. Autopsies even on royal persons were of no great interest to anybody unless there was question of poison. Surgeons were entirely subservient to physicians; and each group was willing to wait and see what another day would bring forth.¹ The "inward parts are not so agreeable to the sight," remarks Fenelon in 1713, "that a surgeon would operate from curiosity," or "cut open the machine in another man merely to find out what was wrong with him." On the other hand, no one objected to letting blood immoderately, for, to the physicians of those days, blood was merely liquid food, collected in the veins. Too much food, as a matter of course, made too much blood; and therefore a hearty eater like poor old gangrenous Louis XIV was bled, purged, vomited, and clystered by turns until his "sciatica" and his gangrene, or their treatment of it, killed him after two and one-half months of agony. Meanwhile asses' milk, an elixir of the carcass of a dead animal, herb teas, frequent rubbings and a new remedy for smallpox, all had been tried in vain. An autopsy was held in the presence of the whole court but merely in order to see if he had been poisoned! The verdict was "gangrene from the pia mater and the dura to the toes." This was in 1715. Fagon, his chief physician, having survived an operation for stone in the bladder in which he had refused to be tied or held, became the chief physician to Louis XV, while his chief surgeon, Mareschal, lived to reorganize the practice of surgery in France, establishing two chairs of obstetrics at the medical school, one for doctors and the other for midwives, and founding the Royal Academy of Surgeons. He died in 1736.

This summarizes the generally unscientific condition of medicine in France in the eighteenth century. Despite some excellent doctors and obstetricians, both men and women, the general treatment of patients, and their nursing care, especially in maternity cases, was abominable. Fortunately for the public there had come about one improvement; few of the old-time peripatetic quacks who operated for hernia, or couched

¹ Edson, Carroll E., "The Last Illness of Louis XIV", *Johns Hopkins Hospital Bull.*, 1912, p. 370.

for cataract, or pulled teeth in the public squares were any longer able to ply their trades, there being new laws now prohibiting them. Unfortunately, by the same laws, educated but unlicensed women were also excluded from everything but maternity practice. For obstetrical work certain courses of instruction were provided for those who applied for them. Lipinska (p. 183) says that in 1755 the French Parliament ordered that "in the future no women or girls might be even associates (*agrégées*) in any institution for teaching bone-setting, tooth-pulling, or in any other surgical work *except* that of lying-in." There had been a notorious case of malpractice in Lille in 1697, after which the net was gradually tightened around all the practitioners of medicine. An unlicensed woman was no longer allowed even to prepare ointments for hemorrhoids, much less to prescribe or sell them, or to carry on the work of her husband, whose assistant she may have been previously. Alfred Franklin¹ says, however, that, after the year 1700, many nuns at the hospital of St. Thomas, in the Rue de Sèvres, Paris, became such excellent surgeons and physicians that they were allowed to operate on all kinds of cases and prescribe for any disease.² Patients, after operations, were cared for as long as was necessary in the hospital; where this was not necessary they were given a cup of bouillon and sent home with a prayer. There was also a dispensary in Paris where young girls, called the "Daughters of Sainte Geneviève," were trained as surgeon's helpers.

Unfortunately, the few properly trained midwives and nurses were confused with the many poor ones, with the result that all were liable to the accusation of being abortionists and charlatans. Of course, if at that time licensed women doctors could have had a university education they would have been recognized as natural physicians for women and children. But this opportunity was lost; and, in the political and social turmoil of the day, abortions were common in spite of both laws and the Church. Unfortunately it was the midwife who got the notoriety and the worldly punishment. In one year, toward the end of the century, in Paris, it was said that six hundred women confessed to destroying "their fruit." It would be impossible, of course, to estimate the number who did not confess it. If the mother employed a midwife to save her life, after she had operated upon herself or taken an abortefacient, that

¹ Franklin, Alfred, *op. cit.*, vol. I, 1893, p. 250.

² Sister Martha, a nun from Besançon, was a surgeon in the French army for several years. She was as kind and attentive to the wounded soldiers of the enemy as of the French, and was decorated with medals not only by her own country but also by Prussia, Austria, and Russia. She died in 1824 at the age of seventy-three.

midwife was held to be *particeps criminis*; and, if the dead foetus might have been viable, the midwife was liable to the death penalty. Still the performing of abortions continued, and deaths from puerperal fever were more common in the city than in the country.¹ In 1773, even in the new lying-in hospitals, the mortality from it was ten per cent, while in the old Paris hospitals twenty per cent. of the mothers died of it.

We have a record of the treatment of one eighteenth century case of this "child-bed fever," that of an Aberdeen physician who, in 1790, was called in to see a dying woman who had been delivered thirty-six hours previously. Her pulse was 140; and she had been blistered, bled, physicked, and dosed with opium before he arrived. There seemed nothing for him to do but bleed her again, which he did; after she died the family blamed him for not bleeding her sufficiently.² Whether most of the instrumental deliveries of the day were fatal is a question. We find, however, that Jean Louis Baudelocque (1746-1810),³ one of the chief obstetricians at the Hôtel Dieu in Paris, and himself a pupil of midwives, felt that in some way it was the forceps that were to blame for the fever, and he removed the kid covers with which Snellie had wound the blades to see if it was the leather which caused the trouble. He used the forceps very gently for fear of injuring the maternal tissues. "By art and not by force," was his motto.

Fortunately, there were in France several women contemporaries of Baudelocque who were fully as skilful as he in the management of difficult labor. Four of them stand out: Madame Dugés and her daughter, Marie Louise Lachapelle, Madame Boivin, and Madame Ducoudray Leboursier. Each deserves more than passing mention. Madame Dugés was born in 1730, the daughter of a midwife, from whom she learned her obstetric art, although she finished her training at La Maternité. She married an Officer of Health, with whom she studied whatever was necessary for her own medical work. She was then appointed medico-legal midwife to the Châtelet law courts and prison. Later, while resident at the hospital, she reorganized the maternity department of the Hôtel Dieu, wrote several books for her pupils as a part of her teaching service, and improved many details of

¹ Corre, A., "*La Mère et l'Enfant dans les Races humaines*", 1882, p. 125.

² Haggard, *op. cit.*, p. 68.

³ Baudelocque was born in Picardy in 1746, and studied under famous midwives at the Maternité in Paris and the Collège de France. He invented the calipers which were named for him, and in 1787 wrote a book for midwives. After 1797 he was a professor at La Maternité, graduating about one hundred and fifty students each year.

hospital care of patients. She died in 1797, leaving her even more famous daughter, Marie Louise, to carry on her work.

Marie Louise Dugés (1769-1821) was born during the residence of her mother at the Hôtel Dieu. From childhood she was the companion of her mother, and was so apt a student that, when she was only fifteen years old, she officiated in a very difficult case of version and saved both mother and child. In 1792 she married a surgeon of the Hôpital St. Louis named Lachapelle, who died three years later. At her mother's death Marie Louise was appointed the resident head and manager of the maternity department of the Hôtel Dieu, where Baudelocque was then teaching obstetrics. Later she studied in Heidelberg under the German specialist, Naegele; and, on her return, was asked to organize a maternity and children's hospital at the Port Royal, where she instituted several worthwhile innovations in the care of patients and the training of midwives. Baudelocque admired her greatly, envied her supple hands, and praised her mental characteristics. He said that in her management of difficult cases she was the most remarkable *accoucheuse* of the time, although, he added, "she still clings to a few outworn customs," which, however, he did not enumerate. Carl Casper Von Siebold (1730-1807) also praised her skill, remarking that her compilation of the statistics of her 40,000 cases was of itself an invaluable work.

Her great work, in three volumes, bearing the title, "*Pratique des Accouchemens, ou Mémoires et Observations choisies, sur les points les plus importants de l'Art; Par Mme. Lachapelle, sage-femme en chef de la maison d'Accouchement de Paris*", went through many editions. It opposed Baudelocque in several respects, evidently somewhat to his annoyance. She classified the positions of the foetus better than he did, reducing his 94 positions to 22. She insisted that instruments should be used as little as possible, and never for the mere sake of shortening labor. She showed how to insert forceps deftly, and how to make effective but gentle traction upon the blades with one hand alone. Also how to finish the perineal toilet as neatly as it is now done. In all her 40,000 cases she interfered with nature in only 1.73%, using forceps only ninety-three times, version one hundred and fifty-five times, symphysiotomy twice, and Caesarian section but once. Her second volume was on extraordinary cases and their treatment; and the third on the then new operation of symphysiotomy. Madame Lachapelle also tried, but in vain, to exclude all but the immediately necessary helpers from the lying-in room because she thought that in some way the crowd of ob-

servers, by obstructing light and air, might cause the dread puerperal fever. It was said, by the way, that Marie Antoinette was nearly smothered by the throng around her bed, so anxious were they to see whether her new baby was a boy or girl, and whether perfect or deformed. This was a custom that had come down from early times, and could not be easily changed.

In bringing about innovations for the management of labor she was more successful. She advised the immediate repair of a torn perineum, and in cases of placenta praevia she insisted upon quick dilation of the os uteri with tampons and the extraction of the infant by version, thus saving the lives of both mother and child. She invented a method of deftly turning a face or oblique presentation of the head so that it could be born without the use of forceps, and of replacing a prolapsed arm or shoulder before it was too late. And from her statistical tables many facts were settled as to the length of pregnancy, the duration of labor, the proportion of cases of dystocia of the pelvis, etc. She died of cancer of the stomach in 1821, leaving no descendants except one daughter, who had become a nun. Her portrait is of an attractive woman in a Gainsborough hat trimmed with ostrich plumes. She wears a ruffled collar, immense puffed sleeves, an absurdly small waist, and an elaborate gown with beautiful laces.

The third of our celebrated French obstetricians was one of the earlier graduates of the Hôtel Dieu school, Angélique Marguerite le Boursier Du Coudray, who was born in Clermont-Ferrand in 1712. She was licensed in 1740, and soon became head *accoucheuse* at the hospital. Her methods of teaching were unique, for it was she (and not Smellie) who first used the manikin of a female torso, or, as she termed it, "*une femme artificielle*," by means of which and with an actual foetus, she provided her pupils with practice in delivery. In 1759 she was given a royal commission with a stipend of 3000 livres a year, to visit other obstetric hospitals and give lectures in other French provinces. In Auvergne she at once organized a class of one hundred pupils in midwifery. The Ministry of Health then sent her to numerous other cities, where altogether she trained four thousand pupils. She was often summoned during her travels, to assist at malpractice cases, where the mother and child had been mutilated almost beyond belief. The Church allowed her to baptize babies so soon as they were born lest, in taking them to Church on a dark night, they might be chilled and die. In her old age she was given a pension of 3,000 livres from the government. She died

in 1789, one of her nieces becoming the head of the Maternité in Bordeaux, and so passing along her torch.¹

Madame Boivin, the fourth in the list, belongs to the eighteenth century, but to its latter part, as she lived and worked well into the nineteenth. Her maiden name was Marie Anne Victoire Gillain. She was born at Montreuil in 1773; educated by nuns in a hospital at Étampes; and married in 1797 to Louis Boivin, an assistant in the Bureau of National Domains. Becoming a widow with one little daughter, she continued her medical studies, which had been begun as a child, and became assistant to Mme. Lachapelle at the Maternité, a position which she held until 1800, when she received her diploma and took up her residence in Versailles. There her daughter was killed, and Mme. Boivin, in agony of spirit, returned to the Maternité to work with her old friend and teacher, Mme. Lachapelle. Jealousy, however, wrought havoc with their friendship; and, after eleven years, Madame Boivin resigned, and accepted a humble position at the salary of a servant, in one of the hospitals for fallen women. She refused a superior position offered her by the Empress of Russia, and also the place of Madame Lachapelle at the Maternité. Her pension, after thirty-five years of work, was so small that she died in 1847 of paralysis and want.

Such are the barest outlines of the life of one of the greatest obstetricians who ever lived. She was given an honorary M. D., *Doctor Honoris Causa*, from the University of Marburg, in Germany, in 1827, very rarely given to women; she may well have been proud to place on the title page of her great work, "*Madame Boivin, docteur en médecine, décorée de la médaille d'or du mérite civil de Prusse.*" She was disappointed not to receive admission to the Academy of Medicine in Paris, and to have no degree from a French university.² A list of her published writings shows her to be worthy a place beside Mauriceau and Bandelocque. As early as 1812 she published a "*Memorial de l'art des accouchements*"; in 1818 came the "*Nouveau traité des hemorrhagies de l'uterus*"; in 1833 *Traité des Maladies de l'uterus et des annexes*," with forty-one plates and one hundred and sixteen figures, all colored by herself. This was published with the help of Antoine Dugés, as were other works on obstetrics written by famous women. Robb says of this

¹ Lipinska, p. 270.

Du Coudray, Mme. Angélique Marguerite Leboursier, "*Abrégé de l'art des accouchements avec plusieurs observations sur des cas singuliers*", 1759. Also "*Oeuvres*", 1773.

² Beaugrand. Dict. encyc. des Doc. Med., 1867, vol. 10, p. 44.

Lipinska, p. 320.

work that it was as modern as it was possible for it to be before the advent of bacteriology. She also wrote on vesicular moles, on abortion, on diseases of the placenta, and published many translations from other languages. She was the inventor of a new pelvimeter, and of a vaginal speculum, and was one of the first to use a stethoscope when listening to a foetal heart. Of Madame Boivin, Dupuytren said that she had an eye at the tip of each finger. He placed his only daughter in her care for a confinement which he knew would be most difficult, but which terminated happily. A woman of great strength of character and noble intellect, she had at the same time a very lovable nature.¹

VIII. MEDICAL WOMEN IN GERMANY

GERMANY, in the eighteenth century, was overrun with people who dreamed, argued, and philosophized about disease without experimenting to prove their positions. Galen's old motto, "Don't think, try it," was not their motto. Maximilian Stoll (1742-1787)² maintained that all or any inflammation, from the crown of the head to the soles of the feet, was caused by wandering bile. He therefore purged and vomited his patients to get rid of their bile. Christoph Ludwig Hoffman (1721-1806) had a theory that all vital force comes from irritability of muscular tissue. He therefore treated his patients by anti-spasmodics or by quieting remedies according to the indications. Georg Ernst Stahl (1660-1734) felt that a thickening of the blood in the portal vein was the cause of sickness, and that the soul, or *anima*, was the restorative of health. John Brown (1735-1788) was called from an obscure Scotch village to Berlin and Padua to lecture on his theory that it was a sthenic or an asthenic state of irritability of the nerves that causes disease, health being a balanced condition between the two. De la Croix Sauvages (1706-1767) spent his time in classifying diseases according to the rules of the botanists and zoologists in classifying plants and animals, dividing them into 295 genera and 2,400 species, for each of which there should be a remedy.

Turning from these vague speculators to men with practical work-

¹ Hunter Robb (*Johns Hopkins Hospital Bull.*, Dec. 1891), says of Mesdames Lachapelle, Boivin, Bourgeois, and Siegmundin: "They should not be judged from the standpoint of the degenerated midwife of today. Their work was exceedingly important and their experience has been scarcely equalled since their day."

² Baas, Joh. Hermann, "*Grundriss der Geschichte der Medicin*," 1876, pp. 490, 492, 502, 508, 545.

ing hypotheses, both Baas and Haeser¹ agree that there was at least one German man in the middle of the century who was important as an obstetrician, fitting his work and teaching to the more advanced theories of the time. This was Joh. Georg Röderer of Strassburg (1726-1763). His "*Elementa artis obstetriciae*" was the best book of its kind written in Germany during the century, and his teaching at Göttingen the most thorough on the Continent. Through his pupil Joh. Friedr. Meckel (1713-1774) the Charité hospital in Berlin was conducted for many years, and a school for midwives was carried on there as good as those in France.

Such was the background of the German medical women of this century. As in other countries, German girls of a certain type, usually those from homes of culture, studied with their brothers or tutors, often following their fathers in some branch of learning. Among them were a few who won the coveted, but generally honorary, title of Doctor of Philosophy from Marburg, Giessen and Göttingen; and there was one woman, Frau Eryleben, who earned and received a degree in medicine from Halle. There seems to have been no feeling in Germany that women had not sufficient brains for intellectual work; but rather that, regardless of her intelligence, her proper place was still the home, and her chief duty to have children. Many women with leisure studied botany. Among them was die Frau Generalin von Borstell of Coblentz, who enriched the botanical gardens of the Rhine with many new plants and arranged them scientifically.² Johanna Charlotte Unzer (1724-1782),³ the wife of a physician of Altona, wrote a history of science; and Jeanne Wyttenbach (d. 1830),⁴ who received a medical degree from Marburg in 1773, wrote a book on Greek medical history, and another on "Beauty, Love and Friendship" (1820); Dorothea von Rodde (1770-1824),⁵ the daughter of a statesman and historian named von Schlözer, of Göttingen, was said to have studied "all the languages possible and all medical subjects." She received a degree of doctor of philosophy from the University of Göttingen when only eighteen. In 1792 she married Senator von Rodde of Lübeck, with whom she traveled all over Europe, studying with Cuvier in Paris and others. Christine

¹ Haeser, Heinrich, "*Grundriss der Geschichte der Medicin*", 1884, p. 308.

² Harless, p. 260.

³ Ibid, p. 220.

⁴ Ibid, p. 284.

⁵ Ibid, p. 233.

Dorothea Hentschel-Guernth, of Silesia (b. 1749),¹ was noted for her researches in medical dietetics. Under the pseudonym "Amalia," and often anonymously, she wrote many books on practical medicine and on cooking, gardening, and household economics. These were collected and published after her death in 1813 by her daughter. Hélène Aldegonde de Nolde (quoted by Lipinska, p. 202) was a well known practicing physician. In 1702 she published a book "*Medulla medecinae, oder Kurzer Begriff, wie man die Medecin recht gebrauchen soll*". Frau Dr. Brückner,² the widow of a court physician in Gotha, studied orthopedics; in 1794 she took up the practice of treating club foot and other bone deformities. She was very successful in Eisenach for many years.³

Another then famous but now little remembered midwife of the eighteenth century was Marie Elizabeth Sauer, the great grandmother of Marie Zakrzewska, who was the first woman professor of obstetrics in the United States. Marie Elizabeth Sauer was a gypsy queen of the Lombardi family, beautiful and highly educated. Her father, a surgeon in the army of Frederick the Great, taught his daughter to be his assistant. As a young woman she is said to have operated on a certain Captain Urban who had been wounded in the chest, working so skilfully that it led to a romance and they were married. Of their nine children, one, Marie Zakrzewska's grandmother, was educated as a veterinary surgeon because of her love for animals; and *her* daughter, Marie's mother, was one of the chief obstetricians at the great Maternity Hospital in Berlin, where Marie herself became chief of staff in 1851.⁴

The Von Siebolds, mother and daughter, were both, as midwives, well known in England. Both received the title *Dr. Obst.* from the University of Giessen, that of the mother, Regina Joseph Henning von Siebold, being an honorary degree granted in 1815. She was the wife of a noted physician at the court of Darmstadt, with whom she studied all the subjects taught in any medical school. Her diploma as *sage-femme* came from the school at Würzburg. Charlotte von Siebold, her daughter, born in 1761, studied first with her mother; and in 1812 she

¹ Harless, p. 235. Harless quotes from Christian Franz Paullini, "*Das Hoch und wohl-gelehrte Deutsche Frauen-Zimmer*," 1705. He also mentions several other names of scientific women, pp. 224-247.

² Ibid, p. 260.

³ Hermannus Conringius, "*In Universam Artem Medicam*," 2 parts, 1687-1735. He mentions 49 authors of antidotaria and 228 medical writers, women as well as men. Conring's daughter, Maria Sophia Schalheimer (or Schelhammer), was a popular physician.

⁴ Vietor, Agnes, "A Woman's Quest: The Life of Marie E. Zakrzewska, M. D.," 1924.

went to Göttingen to study with Oslander. In 1817 she received her degree from Giessen, and then taught midwifery there. Her thesis was on "Extra-Uterine Pregnancy". In 1819 Charlotte von Siebold was called to London to care for the Duchess of Kent at the birth of Victoria, the future queen of England. She died in 1859. Neither mother nor daughter seems to have left any writings; but they made one more link between England and Germany at the time of the Hanoverians.

Mention in passing should be made of a remarkable woman of the following century, the woman who succeeded in reforming nursing, Amalia Sieveking, who was born in Hamburg in 1794. She was well educated, of a well-to-do family. From childhood she had a strong personality, combined with a great love and sympathy for the sick. As the teacher of Florence Nightingale, she may be said to have been the real founder of trained nursing. She died in 1859.¹

The one woman who obtained a full medical degree in Germany in the eighteenth century was Dorothea Christina Leporin-Erxleben (1715-1762), M.D. Halle, 1754, the daughter of a physician in Quedlinburg. As a child she was sickly, and unable to study with other girls, but she enjoyed listening while her father gave lessons to her brother, and, as often happens in such cases, she proved to be a better student than he.² When Frederick the Great visited Halle, in 1741, she appealed to him for permission to matriculate at the University with her brother; and this request was readily granted because of her preliminary studies. Her stay at Halle was shortened, unfortunately, by the sickness and death of her father, when she was obliged to return home. In 1742 she married a minister, a widower with four children, and, within the next few years, had four children of her own. After the death of her husband she went back to Halle, and in 1754 passed the examinations successfully. Her thesis was on the curative effect of medicines pleasant to the taste. "*Quod nimis cito ac jucunde curare saepius fiat causa minus tutae curationis.*" She was probably the first woman to receive a full medical diploma from any German university. The ceremony created quite a furor, the King himself giving her the parchment. She practiced medicine for eight years, and died of cancer of the breast in 1762 at the age of forty-seven. The only article extant from her pen was written in 1742: it advocated the study of university subjects by women.

¹ Nutting and Dock, closing pages of vol. I, pp. 544 ff.

² Baudouin, Marcel, "*Femmes Médecins d'Autrefois*," 1901, pp. 170-175.

Lipinska, pp. 205-209. Dubruc, J., "*Fünfzig Jahre Frauenfrage in Deutschland*," 1896, p. 173.

IX. MEDICAL WOMEN ELSEWHERE IN EUROPE

NOT merely in France and Germany, but, as a matter of fact, all over Europe in the eighteenth century numbers of trained medical women were unobtrusively caring for sick women and children. The women who, during some part of the century, sat on the thrones of Austria, Russia, and Sweden, were sufficiently educated in medicine to spend vast sums of money to prevent epidemics, to build new hospitals and homes for orphans, to open schools for midwives, to enlarge their universities, to provide the best possible medical instruction and to make inoculation for smallpox compulsory throughout their kingdoms.

Austria

Austria was then a relatively strong country. In 1772 it gained many of the old possessions of Italy and shared in the partition of Poland with Russia and Prussia. It also practically owned Belgium. Austria was ruled by a woman of great wisdom, Maria Theresa (1717-1780), the daughter of the Emperor Charles VI, who ascended the throne at the age of twenty-three. She made it one of her first businesses to organize new medical schools, sending to Holland for Van Swieten, a pupil of Boerhaave, the most able teacher in Europe, and asking him to come to Vienna to reorganize the medical school, hospital, and clinics, and to open a great maternity institution. By the time Maria Theresa died, upward of three thousand mothers were delivered in that hospital every year with a mortality of only 8.4 in 1000 births; midwives were so carefully trained that not until the days of Semelweiss, in the middle of the following century, was the mortality so low again. The contrast of Vienna and Paris in this respect is striking, for in the French capital even as late as 1864 there were 124 maternal deaths from puerperal fever in every 1000 births. The cleanliness and care of the *Allgemeines Krankenhaus* were as good as in the palace of the queen herself, who, in her sixteen pregnancies, had no pathological abnormalities; and for one hundred and fifty years this old Vienna hospital was the rendezvous for students, both men and women, and of doctors and midwives from all over the world.

Scandinavia

During the eighteenth century the Scandinavian countries were especially well represented by women obstetricians. Schools for midwives were founded by the governments of Norway, Sweden, and Den-

mark early in the century, and were developed and managed with the greatest skill. There was in all Germany only one such school, and that in Strassburg, when the school connected with the University of Copenhagen was opened. The greatest teacher of obstetrics in Denmark, Matthias Saxtorph (1740-1800), was appointed professor at the medical school in 1761; and for many years he followed the methods of Van Swieten, placing even more emphasis on the necessity for cleanliness than was done in the Vienna hospitals. Under Saxtorph women were so thoroughly trained in midwifery that men specialists in obstetrics received only abnormal and operative cases. This practice has survived to the present time; and in no part of the world have maternal morbidity and mortality or infant deaths been kept at so low a figure as in Scandinavia. Naturally there was some opposition to giving increased obstetric responsibility to women. There were those stubbornly opposed to the use of any instruments and to Caesarian section; while there were others in favor of educating midwives to manage instrumental and surgical as well as normal deliveries. The final result was the compromise stated. Unfortunately, as in the days of the monastic women, we know less of individual names in Scandinavia than in countries where there were outstanding *accoucheuses* who wrote books.

Holland

Vrouw (i.e. Frau) Cramer, of Holland, belongs to two centuries. Catherine Gertrude du Tertre Schraders was born in 1655, in Friesland, the daughter of a pastor. She was a warm-hearted, rather religious girl, and was married young to a widower with six children, a surgeon named Ernst Willem Cramer, who died in 1692. Fortunately, during her early married life, she was able to study obstetrics with the greatest teachers in Holland, Hendrik Van Deventer (1651-1724) and Abraham Cyprianus (whose book on tubal pregnancy was published in 1700); and, owing to her reputation for kindness and skill in medicine, she was able, after her husband's death, to command a large practice in midwifery. After twenty-one years of widowhood, in 1713, she was married to Thomas Hight, a gold- and silver-smith. He died in 1721, and again she took up her obstetric work. She records that in her seventy-third year she cared for seventy-three confinements, for which she received 225 gulden plus "something for medicines." She died in her ninety-first year, having for fifty-two years kept case records which included the names and ages of the parents, the abnormalities of the confinement, and any other items of interest connected with her more than four thousand

births, among which were sixty-four pairs of twins and three sets of triplets. This diary, of 544 pages,¹ was given to the Netherland Medical Association in 1865, and published in 1926. This record shows that her obstetric work compares favorably with that of the best men of her time. She had six or seven cases of placenta praevia, for the treatment of which she was remarkably quick and skilful. She always enjoyed life. Her patients, mostly farmers' wives or cheesemakers, were intelligent, friendly, and generally prosperous. Like all Dutch homes, theirs were proverbially neat, the floors spotlessly clean from their scrubbing with fine white sand, and this may partly account for Frau Cramer's low percentage of puerperal fever.

Hungary

In 1779, in a country district of Hungary, there was born a daughter to a medical woman, the Baroness Von Calisch, who had a very large practice not far from old Buda. This daughter, Maria, very early began to study medicine with her mother, and soon became an active and intelligent assistant. Together they performed all kinds of surgical and obstetrical operations, and were sought by patients from far and near. In 1796 Maria married the Baron Von Zay, a rich nobleman, who was willing to have her continue her work among the poor sick. Hungary has always been famous for its medicinal springs. The Baroness Von Zay became interested in "magnetic" waters, and after 1801 she devoted her energies, in the main, to giving treatments by baths and in prescribing herb teas for her patients along with enormous draughts of water. She is said to have drunk nineteen quarts of "magnetic" water in one day to quiet her own nerves.²

Italy

It has been said that no Italian university was ever closed to any applicant who could pass its entrance tests. We remember that the medical school at Salerno was coeducational; but that it failed to attract pupils after Bologna remodeled its university in the thirteenth century, and it and other schools became popular.³ It seems probable, however, that until 1799 no woman had applied for a degree in medicine at Bolo-

¹ "*Het Dagboek van Vrouw Schraders, Een Bijdrage tot de Geschiedenis der Verloskunde in de 17de en 18de Eeuw*". Door Dr. B. W. Th. Nuyens, arts te Amsterdam. Overgedrukt uit het Nederl. Tijdschrift voor Geneeskunde (70th year, No. 18), 1926.

² Harless, op. cit., pp. 284-285.

³ "*Memorie Storiche sulla Università di Bologna*," vol. I, 1840.

gna except Maria delle Donne, who became a "laureate"; although Laura Maria Caterina Bassi-Veratti had become a doctor of philosophy there in 1732, and was for a few years one of its lecturers in anatomy. There were, however, several medical women in Italy who had degrees from other universities. Among them was Angiolina of Padua, who held the chair of obstetrics at the University of Padua; the Marchesa Buttelini, who practiced in Rome under the patronage of Pope Benedict XIV (spending most of her time, however, at his command, in inoculating patients with smallpox); and Maria Pettracini,¹ and her daughter Zaffira Peretti, both graduates of the University of Florence, and both teachers of anatomy and practitioners of medicine in Ferrara, until Zaffira, sometime after 1780, was appointed head of the school of the *levatrici*, or midwives, in Ancona.

Of Laura Bassi² and Anne Morandi Manzolini³ and Maria delle Donne, further biographical details should be given, for they were famous in their time.

Laura Bassi was born in 1711 in Bologna. She was a studious child with a precocious intellect. In 1731 or '32 she was granted a degree by the University of Bologna, i.e., "*fu laureata*," Doctor of Philosophy, after a severe public examination. She continued to study there, and became an authority in mechanics, hydraulics, anatomy and natural history. She was soon appointed to the chair of anatomy, drawing large classes of students to her lectures. She then married Dr. Giuseppe Veratti. It was said that her "natural modesty prevented her writing books;" but, as she became the mother of twelve children and personally attended to their education, one wonders how much time she could have found for writing. She died in 1778, and her statue was placed in the Institute of Bologna.

Of Anne Morandi Manzolini (1716-1774), one of the most famous of eighteenth century medical women, many biographies have been written.⁴ She was born in Bologna in 1716, and brought up like other girls of her time, planning for marriage and a domestic life. Her screams of fright as a child of eight at seeing a lamb killed and covered with

¹ It is said that Maria obtained her medical degree in 1780 in Florence. Zaffira was formerly supposed to have obtained hers in Bologna in 1800. She was then appointed Director General of Midwives at Ancona. Lipinska, p. 156.

² Bonafede, Carolina, "*Vite e Ritratti di diciotto Illustri Donne Bolognesi*," 1847, p. 173.

³ Anne Morandi Manzolini had the honor of appointment to a professorship at Bologna without having a degree.

⁴ Bartolotti, Fanny Ghedini, "*I Primi Anni di Celebri Personaggi*," 1872.

Bonafede, Carolina, op. cit., p. 169.

blood, and the arrival on the scene of her future husband, aged twelve, to calm her excitement, resulted in her marriage to him when she was twenty. Giovanni Manzolini was then professor of anatomy at the university, and an expert in making anatomical models. He was dependent on his salary for their living, and already consumptive. Anne's fear of dead bodies still obsessed her; but her husband's ill health made it necessary for him to make his wax models at home, and in their very small house it was obvious that his illustrative anatomical specimens could not be kept out of her sight. Five years later Anne was already the mother of six children, and was herself an expert moulder of wax anatomical models, from the sale of which she hoped to support her family.

She also devoted herself assiduously to the study of anatomy,¹ to such good effect that long before the death of Manzolini, the Rector of the University made public announcement that, during the enforced absence of Professor Manzolini, his wife would lecture in his place. The great audience burst into applause as Anne walked up to the table on which a cadaver lay and began her lecture. Her clear description and discussion of the anatomical relationship of the various portions of the specimen aroused the admiration of her hearers, and before she finished, their enthusiasm was without bounds.

In appearance she was tall and blonde, said to have been very handsome, and was an indefatigable worker. She occupied her husband's position in the university until his death, and was then appointed lecturer in her own name. In 1760 she was elected professor of anatomy, and given the additional title of "*modellatrice*." All Europe "resounded with her praise." The Emperor Joseph II of Germany bought several of her models. The Empress of Russia, Catherine II, invited her to Moscow to lecture, and made her a member of the Russian Royal Scientific Association. She was elected to membership in the British Royal Society, and invited to lecture in London. She died in 1774, at the age of fifty-eight, and was buried in the church of St. Proculus, Bologna, beside her beloved Giovanni. Her bust stands in the Pantheon, and also in the museum of the University. At least one of her models is in the Wellcome Museum in London, a beautiful figure of the body of a young woman showing the viscera, made of some preparation of clay and wax, colored to imitate nature; and in the library of the university

¹ Fantuzzi, Giovanni, "*Notizie degli scrittori bolognesi*," 1781-1794, vol. 9, pp. 113-116, says that Anne Manzolini discovered the correct termination of the oblique muscle of the eye, which might very well have been named for her.

are effigies, in wax, of both Anne and her husband—he dissecting a heart, she dissecting a brain. In the old anatomical theatre is the rostrum from which she delivered her lectures. The room has a richly painted and carved ceiling, and deeply carved stalls from which the students watched the dissection of the body, which had first been blessed by the priest in the chapel below. From behind a grill far up in the wall the Pope's inquisitor watched the proceedings.¹

Maria delle Donne was born in 1776 in a little hill-town of the Apennines not far from Bologna. Her father, a learned man, wished her to study medicine, and employed a priest as her tutor for many years until she was able to enter the medical school of Bologna.² She desired to specialize in comparative anatomy and physiology, but took the regular subjects, and in 1799, after a three days' examination, mainly oral, and in the presence of a large audience, she was crowned with laurels amid great enthusiasm. In appearance she was a modest young woman, usually dressing in black, and wearing a long black veil.³ She knew both Latin and Greek and was also a fine musician.

Her ability was recognized by Napoleon. In 1802 she was proposed for the chair of physics at the university, but failed to win it. She was then appointed by Napoleon professor of obstetrics. In 1804 she was appointed director of the school for midwives, over whom she was a benevolent despot. In 1807 Napoleon made her a member of the French Academy of Sciences. Maria delle Donne died in 1842, mourned by scientists, patients, and students as the famous "*dottoressa*." Her portrait bust stands in the library of the university.

Although the practice of medicine in Italy⁴ was decidedly more

¹ Martindale, Louisa, "Proceedings of the Medical Women's International Association in Bologna", 1928.

² From Ludovico Barbieri, librarian of the University of Bologna, 1931, Dr. F. C. Waite received the following note: "*Di donne che ebbero veramente la laurea in medicina nell'Università di Bologna, non si trova che la Maria delle Donne. Essa fu laureata il 19 dicembre 1799 in filosofia e medicina ed abilitata all'esercizio di quest'ultima scienza. Fu poi direttrice della Scuola delle Levatrici in Bologna.*" "*La Laura Bossi fu laureata in solo filosofia. L'Anna Merandi Mancolini non fu laureata. Per la sua abilità di modellare parti anatomiche, ebbe nel 1760, dal Senato bolognese, una cattedra di anatomia nell'Università, con l'incarico di modellatrice.*" (This statement applies only to the University of Bologna.)

³ Mazzetti, Serafino, "*Repertorio di tutti i professori antichi e moderni della famosa Università e del celebre Istituto delle scienze di Bologna*", 1847, pp. 379-394. Fantuzzi, Giovanni, *op. cit.* Medici, Michele, "*Compendio storico della Scuola anatomica di Bologna dal nascimento della scienze fin a tutto il secolo XVIII*", 1857, p. 430. Bonafede, Carolina, *op. cit.*, p. 127. Baudoin, *op. cit.*, p. 208.

⁴ Rouyer, Jules, "*Études Médicales sur L'Ancienne Rome*," 1859.

open to women in the eighteenth century than in other countries, few women availed themselves of the privileges of a university education.¹

Poland

In Poland, before its partition, women doctors practiced medicine so commonly that historians have failed to mention them by name. One² stands out because of the varied incidents of her career. Salomé Anne Roussietski (or Rusiecki) was born in Nowogrodek in 1718. When thirteen she was married to an oculist named Halpir, who took her to Constantinople where he had a large practice. There she studied medicine, thanks to the Pacha, Hakim, and assisted her husband in his work, but, being more deft than he, she soon had the larger share of the patients. This made him jealous, and he deserted her and her new baby, taking all the family funds with him. When the young wife recovered from her lying-in and prostration she started for her home, helped by some wealthy Turks, and stopping at Adrianople and other cities to practice and earn money for further travel. In Sophia she found her husband sick and penniless. She cured him, only to have him soon fall a victim to the plague. After his death a wealthy Turk proposed to marry her; but she refused his offer. This so angered the man that he gave her up to the authorities as a spy; but, while in jail, she cured the son of the jailer of erysipelas, and he connived at her escape. After many adventures she arrived at her old home where she commenced again to practice, and again was married, this time to a worthless officer named Pilstein. When the Austrian-Turkish war broke out she found herself able to help many a Turk whom she had formerly known; but in order to liberate them she had to take the long journey to St. Petersburg. On her return she found that her second husband had absconded with all their property. Anne was pregnant; but she immediately took up the practice of her profession again. After the birth of her Pilstein baby she made quite a fortune as an oculist in various towns among the Turks, and returned to her old home to visit her daughter and educate her son. In 1759 she again returned to Constantinople, and became physician

¹ Walsh, James J., "Medieval Medicine," 1920, p. 158. "The Archives of Naples have preserved many licenses of women doctors. A preamble to such a license reads: 'Since, then, the law permits women to exercise the profession of physicians, and since, besides, due regard being had to the purity of morals, women are better suited for the treatment of women's diseases, after having received the oath of fidelity, we permit,' etc."

² Baudouin, Marcel, "*Femmes Médecins d'Autrefois*," 1901, p. 161.

Lipinska, p. 218. From the Autobiography of Mme. Halpir, written in 1760.

to the harem of the Moustapha. Of her later career nothing is known; but Austria, Poland and Turkey each claim her as their first woman doctor.

Russia

The ruler of Russia during a large part of the eighteenth century was Catherine II, a German princess, born in Stettin in 1729. Her marriage to the Grand Duke Peter, afterward Peter III, undoubtedly a moron, was very unhappy. She managed to have him removed in 1762, and then ruled alone as Empress for more than thirty years, dying in 1796. A brilliant woman, well educated in languages, history, art, science and hygiene, she was active in reforming the sanitation of her vast country, in building hospitals, and in strengthening the university.¹ She was, however, a tyrant, and her love-affairs were a scandal. Like Maria Theresa she studied medicine and provided for the education of Russian men in science, and of women in midwifery. It was almost a hundred years after her death, however, before women were admitted to the higher institutions of learning.²

Spain and Portugal

Spain was in full decadence in the eighteenth century. After the banishment of the Moors, Jews, and "heretics" from the country, such scholars as were left allowed themselves to be ruled by the Church, which, because it had no rivals, became a dictator in education as in religion. The Spanish nobility were too rich, the lower classes too poor or too lazy, to insist upon the internal reform of the Church. Hence in medicine, as in road-building and sanitation and in general education, Spain slipped backwards continuously. The only good medical book published

¹ Peter the Great built the first hospital and medical school in Russia in 1707, but his followers, Elizabeth and Catherine II, carried on the work with commendable zeal.

² The successor of Catherine II was Maria Feodorowna (d. 1828). She was the wife of the Czar Paul, and was even more interested in medical charities than Catherine. She had studied medicine as a girl, and delighted to visit hospitals, and to sit beside the patients, studying their symptoms and prescribing for them. She opened schools for medical students and midwives throughout the empire, and made an excellent beginning for the benefit of the poor and oppressed. After her death the Czar Nicolaus placed a princess at the head of all the charitable work and medical institutions of the land. But the country was too vast for much of an impression to be made in one short lifetime, and her example was not followed with any ardor. Fifty years later women who elected to study medicine went to Switzerland, to study at the universities, and young men who were able to afford it went to Russia to study at the laboratories with the Russian scientists, where women were not welcome.

in the eighteenth century was a Spanish manual for nurses (1728). With poor hotels and roads it was difficult to travel in Spain, so that the contact with the world at large was slight. The same conditions obtained in Portugal, which, if anything, made less advance than her neighbor, especially in sanitation and medicine.

Switzerland

Switzerland in the eighteenth century became a free republic under a liberal constitution. Its mountaineers had always stood for independence and for freedom in religion; so, from the earliest days of the republic, the education of girls as well as of boys was provided for, and women have been taught to be of service medically. From the eighteenth century, unfortunately, few names of prominent women doctors have come to light; but we do find Victorine Kaltenbeiner, in 1777, teaching the art of midwifery to large classes of men and women in Lucerne. Evidently coeducation was the rule; and for a text-book Victorine herself had translated that of Van Hoorn (1661-1724), to use in her classes. He was a Swedish obstetrician, a pupil of Portal, and especially successful in cases of version, face-presentation, and placenta praevia. Why she preferred his book we do not know. Its title was: "*Die zwei wohlbelohnten Wehemütter Siphra und Pua, oder Anleitung zur Hebammenkunst*". She made annotations and additions to the text from her own experience. (Harless, p. 221.)

X. THE 18TH CENTURY—THE GENERAL STATUS OF MEDICINE

IN considering the status of medicine in the eighteenth century we must remember that the remedies of the day were not proprietary, and that the symptoms of a disease generally indicated its conventional treatment. Because it was difficult and costly for them to obtain a university education most medical women went without it, and a woman who was practicing as a physician or midwife gave very little indication of her real scientific or medical knowledge. On the other hand all medicine was still in such an unscientific state that women equipped with the ordinary empiric remedies were usually as competent to use them as men were. By both men and women the few potent drugs in common use were often given in what we should call poisonous doses; but it is probably a safe guess that women were in those days more hesitant than men in prescribing in-

ordinate doses of such remedies as calomel, antimony, opium, arsenic and cinchona bark. Whether they were as drastic in their bleedings as men is also doubtful.

The century was one of the most absurd juxtapositions of quackery and sincere endeavor. John Wesley's and Governor Winthrop's medical knowledge would, of course, never pass. But in an age when Gall, a university man (1758-1828), could propound his phrenology to admiring crowds, when Perkins could claim the cure of hundreds of patients merely by stroking them with his metallic "tractors", when Mesmer (1733-1815) with a magnet could promise to draw out cancers, when the relics of saints were still apparently curing hosts of believing pilgrims, should we be critical of the medical women of the day simply because many of them lacked formal medical education?

On every hand in this century one is confronted with puzzling contradictions that hinder the just appraisal of its medical progress. In Scandinavia, Ling (1776-1839) was placing medical gymnastics on a scientific basis of anatomy and physiology; and the Swedish physician Nils Rosen von Rosenstein (1706-1773) of Upsala was elaborating a system of pediatrics which he taught in Stockholm. His book on "*Kindkrankheiten*" was a stand-by for many years. In France Antoine Lavoisier (1743-1794) was discovering the interchange of gases in the lungs; and Laennec of Quimper (1781-1826), having discovered the use of the stethoscope, was teaching his students how to correlate the sounds heard during the life of a patient with the pathological conditions seen in the autopsy. In other words here were really scientific men steadily groping toward the light.

But, along with them, at the same time, were scores of others content to hash over once more all the old out-moded Galenical theories. Jean Astruc (1685-1766), a professor at Montpellier, although he admitted he had never seen a confinement, yet felt competent to write a work on obstetrics in six volumes—"sich auch theoretisch mit geburtshilfe befasste," says Baas of it (p. 531). In Lyons we hear of a hospital that owned only six instruments—a gag, a trephine, scissors, a knife, a needle and a pair of forceps—and felt that it actually needed no more, despite the fact that as far back as the sixteenth century Ambroise Paré had enumerated scores of instruments which he found useful in his operations. François Joseph Victor Broussais (1772-1838), of St. Malo, toward the end of the century evolved the theory that all sickness began in the internal organs; he preached anew the doctrine that the treatment for such diseases was always bleeding. It is said that, while he

lived and taught in Paris, every person in the country was bled at least once; and that in pneumonia nothing but death stopped the work of the lancet. His treatment for gastro-enteritis was mainly the application of leeches, and often he had the abdomen entirely covered with these creatures.

In Holland were the same anomalies. Hermann Boerhaave of Leyden (1668-1738) was almost worshipped by his pupils; but Albutt says of him that he "contented himself with hashing up the partial truths and entire errors of his time." (Garrison, p. 244.) In Germany there was the same mixture of eager study by a few and utter lack of it by most of the so-called intellectual leaders. Peter Faber, while a professor in Paris, wrote seventeen volumes on therapeutics based on the use of the philosopher's stone; and Albrecht von Haller (1708-1777) of Berne and Göttingen, called the "master physiologist of his time," a sort of universal genius, and an omniverous student, with the reputation of being one of the greatest writers on surgery, nevertheless, according to Halsted, "never demeaned himself by operating." Van Swieten, like Haller a pupil of the great Boerhaave, could reorganize the hospitals of Austria on an almost scientific scale, could measure the heat of the human body with a Fahrenheit thermometer (1731) and realize its significance, while Hahnemann (1755-1843), despite his extreme claims, could accomplish little in helping to stem the tide of over-medication. Such women as Amalia Sieveking and the Fliedners in Germany attempted to raise the profession of nursing from its low estate. Erasmus Darwin could stand out against the wine-drinking so common in his time, and did advocate gentle treatment of the insane and the sanitation of homes and hospitals. James Currie of Scotland in 1797 could publish a book the title of which contains forty-five words, advocating cold baths in fever and commending the blood-pressure apparatus of Stephen Hales; as did William Cullen, also from Glasgow, who was the first medical professor in Great Britain to lecture in English to his students, and whose "First Lines of the Practice of Physic" was published in 1776, and used as a teaching manual and home doctor's book by both men and women in England and America for many years.

On the other hand, it was something of a wonder that children, once born, survived. Only six remedies were used at the children's dispensary in London at the end of the century, and they were: mercury, Peruvian bark, iron, opium, tartar emetic and vitriol. Infant feeding, like medication, was empirical and very unsatisfactory; and even little babies were cupped and bled. Variolation and vaccination made slow

progress, despite the efforts made by such women as Martha Mears, Lady Montagu, Catherine II of Russia, Maria Theresa in Austria, and the Baroness Bernsdorf in Denmark.¹

Little has been said of the surgery of the eighteenth century because little can be said in its praise. Between the death of Ambroise Paré in 1590 and that of John Hunter in 1793, there were few good surgeons, either men or women. Of Hunter (1728-1793), Halsted of the Johns Hopkins Medical School has said, "His name is eclipsed by that of no other surgeon." His life-story fills many volumes. Garrison (pp. 274 ff.) gives us a short but very appreciative account of him, and no one who passes under his portrait bust at the gate of St. George's Hospital in London, or visits his museum at the Royal College of Surgeons, can fail to admire him. In England there had been practically no real teaching of surgery before the end of this century, when John Hunter used anatomical dissections as a guide to surgical technique. Even with him cadavers were so difficult to obtain by the 'resurrection men' that dissections for teaching purposes were very inadequate. And not until 1800 did George III grant a charter to the Royal College of Surgeons. For fifty-five years they had been separated from the barbers, without any improvement meanwhile in their methods of operating.

France was the first country to appreciate that surgery could and should be improved.² In 1724 Mareschal succeeded in establishing five surgical professorships at the universities throughout the country; and, with the help of these newly appointed surgeons, he founded the French Academy of Surgery. Each surgeon on the medical faculty was obliged to lecture on obstetrics as well as on methods of operating. This of course resulted in the further widening of the gap between the midwives and barbers on the one hand and on the other the men who earned the right to practice surgery by virtue of a diploma. In 1794, in the midst of the revolutionary turmoil, French women tried to assert their rights to university education. A law had just been passed wiping out, then and there, all distinctions between physicians and surgeons. The practice of medicine was to be open to all, on payment of a license fee. This, however, was soon interpreted to mean only to men with university training, a training which women were still unable to secure.

In Germany, during most of the century, surgery was as unscientific as it was in England. Frederick the Great was obliged to hire

¹ Klebs, Arnold C., "The Historic Evolution of Variolation", *Johns Hopkins Hospital Bull.*, vol. 24, p. 69.

² Garrison, op. cit., p. 326.

army surgeons from France; but even they were obliged to act as barbers and shave the officers, because no barbers were sent with the troops. Moreover in peace times the barbers themselves were allowed to perform any operations they pleased; and even the public executioners were thought to be quite capable of doing surgery. It was not until 1810, when the University of Berlin was opened, that surgeons were properly educated and given due respect. In Italy, although it was never difficult to obtain cadavers for dissection from among convicts and suicides, many of the professors of surgery preferred to teach from wax models.

One thing at least developed in the eighteenth century: it became possible for medical practitioners to become wealthy from their profession; and, as has often been the case, some of the quacks seemed to do as well as the most competent. Patients who had money bought Jane Stevens' soap pills for their gout, enabling her to ride around in almost royal style. Unfortunately, not all doctors, even those who were capable physicians, became financially successful; and one at least, not a woman but a writer, Oliver Goldsmith (1728-1774), committed suicide in a fit of despondency over his debts.¹ On the other hand, several men with no more culture than Mrs. Mapp, were equally prosperous. Of a quite different type were John Huxham, William Heberden, Samuel Garth, and Richard Mead;² they can be compared with such women as Elizabeth Blackwell and Mrs. Nihell. All received large fees. It is possible to visualize these men and women, the best physicians of the period, as they visited their patients, dressed in the style of the day; the men, pompously walking ahead of their footmen in tie wigs and knee-breeches and always carrying the gold-headed cane, which was a sort of trade mark of the profession; Huxham on horseback, in a red coat and always galloping as if he was going to a dying patient; the women riding in state with their coachman and footman, their voluminous hoop-skirts, twelve yards in circumference at the bottom, filling the whole seat of their carriage.

The three great evangelists of the century, George Whitefield, John Wesley, and William Carey, represented still another type of the medical practitioner of the period, combining some knowledge of therapeutics with religious teachings, very much like the early medical missionaries of our own day. Wesley's book, "Primitive Physic, An Easy and Natural

¹ Goldsmith is said to have died from an overdose of James' Powder. This consisted of a large number of drugs the most powerful of which was tartar emetic. This was a favorite remedy of Dr. Samuel Johnson.

² Garth's "Dispensary" and Mead's book on pestilences and contagion are quite readable even today, interesting to laymen and doctors alike.

Method of Curing Most Diseases," (1788) was scientifically bad. Its author placed his "probatum" on linburger cheese poultices, boiled cow heel and water gruel, the juice of rotten apples for sore eyes, cold water from the pump poured down the back to cure insanity, and the application of cobwebs to dry a bleeding surface. But his influence went beyond such specifics. For he taught that sickness appeared to be sent as a punishment for sin; that the Lord could bless any remedy, and use it for the patient's cure; and that He would certainly bless those who self-sacrificingly endeavored to aid the needy.

In the American colonies, as we have seen, all the homely wayside remedies were still being used. Of many of the American eighteenth century doctors it might have been said as of old Daniel Thurber of Mendon, Massachusetts, "He had no diploma, and he needed none." He constantly taught medicine to pupils, a few of them going to Europe for further study. One of the earliest graduates of an American medical school, Philip Syng Physick (1768-1837), was a really expert surgeon. He relieved Chief Justice Marshall of one thousand bladder stones in five minutes, a feat of dexterity not equalled today; and it is recorded that John Jones, the author of "The Plain, Concise, Practical Remarks on the Treatment of Wounds and Fractures", the first book on surgery printed in America, could amputate an arm in three minutes and tie all the bleeding vessels. We can point to no woman so expert.

James Thacher, in his "American Medical Biographies" (1828), gives us a good deal of valuable information about the men who made medical history at that time. Glancing through his list of names it is interesting to find how few, relatively speaking, were graduates of any university. Dr. Lemuel Hopkins of Hartford, Connecticut, (born in 1750) a literary genius and wit, was not a college graduate; but he had a large and successful practice. Dr. James Hurlburt of Berlin, Connecticut (born in 1717) was a "good doctor in serious cases if drunk." (Many of the old practitioners drank freely from every sideboard on their rounds; or are reported as having been "unbecomingly addicted to the pleasures of the flesh.") Dr. Ammi Cutler of Portsmouth, New Hampshire, "studied with an eminent physician," and was chief surgeon in the French and Indian Wars. Dr. Ezekiel Henry of Boston studied with a French physician and set himself up to oppose Boylston there. A much educated and titled practitioner, Waterhouse, who also had had no university training but much practical experience in medicine and surgery is another New Englander who was considered very skilful. Dr. Charles Jarvis of Boston and Dr. Hall Jackson of New Hampshire,

both famous for their medical ability, studied only with physicians, the latter being a man-midwife of high rank and a coucher for cataract. Dr. Moses Little of Newburyport, Massachusetts, studied with Dr. Swett of Salem. In 1808 he officiated at one-half of the births in his home town, which was then larger than Boston. He died of phthisis, first writing his own epitaph:

“Here lies the body of Moses Little, who died aged 45,
Phthisis insatiabilis
Patrem matremque devorasti—
Parce! O Parce! liberis.”

Thomas Dover, a noted medical pirate (who died in 1742), although an Englishman, was often in New England, and was frequently consulted for his famous fever remedy of ipecac and opium (he gave from forty to seventy grains of opium at a dose) and for his treatment of smallpox, which treatment was that of Sydenham, in whose house Dover was living when, as a boy, he was taken sick with that disease. Dover himself says that the treatment was worse than the disease and “made him very ill”; for it consisted of copious bleeding and large doses of ipecac and antimony.

Toward the end of the century the first American pharmacopoeia was published. It contained a vast amount of padding, some two thousand remedies, many of which were unobtainable, and others obviously useless. The 3500 physicians in America who were here at the end of the century had to get these remedies where they could. They picked chick-weed and skull-cap along the road; scraped verdigris from copper pennies; and, in order to “combine simplicity with elegance,” administered three drachms of this verdigris with one ounce of calomel at a dose. As for the herbs women were generally the ones to gather them and prepare them for use:

Sage, lavender, and rue,
For body's hurt and ill,
For fever and for chill;
Rosemary, strange with dew,
For sorrow and its smart,
For breaking of the heart.
Yet pain, death, tears, all come to dust,
And even the herbs must.

—Lizette Woodworth Reese, *Herbs*.
(Atlantic Monthly, 1902)

About thirty-one drugs were commonly imported from Europe before the Revolutionary War. Most of them are still in use. Among

them were senna, gentian, lavender, foxglove, Fowler's¹ solution of arsenic, mercury, cinchona, and hydrochloric acid. Other remedies of the day simply repeated the old superstitions of long past ages: coral necklaces for teething babies, camphor bags to ward off contagion, leeks and dried windpipes for coughs, rhubarb and boneset for fevers, sulphur for the liver. "The Queen's Closet Opened," originally a medical book written for Henrietta Maria, the wife of Charles I, was still being used in the colonies in the eighteenth century. It advised the use of live hoglice, earthworms, blackened tips of crabs' claws, calcined toads, and even mummy.² Dr. Atkinson's angelica root steeped in vinegar was used to ward off epidemics. Precious stones, crushed and drunk, were prescribed to expel worms from the brain in cases of melancholia; and fennel seeds, steeped in rose water, even though merely inhaled, were taken as a cure for sleeplessness. Notwithstanding these "remedies," the death rate in America, although very high, was no higher than it was in the old countries of Europe. We find such causes of death listed as "bleach," "lethargy," "rising of the lights," "stopping of the stomach," teeth, worms, "tissick," wen, consumption, cough, ague, fever, flux and smallpox.

When, in 1702, Robert Pitt sought to expose the utter uselessness of some of the remedies in books of the "Queen's Closet" type, especially of the bezoar stone, and theriac, he closed with these words: "When you shall be surprized, in the absence of your Physitian, trust to your own Constitution, which will endeavor to preserve itself, and will certainly effect it in the most common Disorders, but with ill Medicines the Dangerous will be made more malignant."

Under such conditions the eighteenth century closed. No one could have then foreseen that by the middle of the following century political revolutions were to change entirely the status of women in Europe and America. Because of the advance in education of men and women, and the perseverance of Elizabeth Blackwell and Ann Preston, medical schools were opened for women, schools equal in rank with medical schools for men. The nineteenth century was to see a spectacular advance of medicine in every one of its branches, and with it the coming of women into a profession specifically their own, as colleagues of men, not rivals, and as specialists in the diagnosis and treatment of the diseases of women and children, and in preventive medicine.

¹ Fowler was an apothecary and physician in New York. He died in 1801.

² Ashton, "Social Life in the Reign of Queen Anne," pp. 313 ff.

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Appendix

WHILE this book was going through the press, I spent some time in London. There I met Mr. A. W. Haggis, one of the editors of the Welcome Historical Museum publications in London, who has interested himself in researches for evidences of the licensing and registration of medical men and women in England since the early days of the sixteenth century. He has studied the records in many counties and finds that previous to 1511, in the time of Henry VIII, there was very little restriction of the practice of medicine by men or women in any part of England.

Henry VIII was an experimenter in pharmacy, and enjoyed working like the alchemists in his laboratory. His friend and physician was Linacre, one of the most advanced men of the period. Cardinal Wolsey was also one of his trusted advisers. In 1511 these three men evolved the idea of creating the College of Physicians, and giving to it, together with the Archbishop of Canterbury, the power of medical licensure of physicians and surgeons throughout the realm. They wrote an Act, No. 3, C 11, which Henry signed some time before the creation of the College of Surgeons.

By means of this Act of 1511 (mentioned on page 337), which was ratified in 1518 and again in 1523, women as well as men were examined as to their qualifications for practice. Linacre opened his house as a college for lay men and women who also studied medicine as apprentices with other doctors; and after a sufficient length of time and study, eight years in some cases, they passed the examinations of the College of Physicians and of the Archbishop, paid their fees, and practiced where and when they chose. Quacks and impostors and unlicensed men and women were prosecuted by fines or imprisonment.

Mr. Haggis has found the original licenses of sixty-six women among those of a thousand or more men in seven dioceses. Four of these women were physicians and surgeons, one was a medical woman, two were surgeons and midwives, thirty-one others were licensed in surgery, twenty-one others as phlebotomists and permitted to treat "green wounds," possibly gangrenous or seriously infected wounds, one was a specialist in diseases of the breast, another in bone-setting, etc. Eight

of the sixty-six were married to medical men practitioners who passed their examinations under the same conditions as the women.

The license of one, Eleanor Woodhouse, has been copied and kindly presented by Mr. Haggis for use in this volume, together with its translation.¹

Separate interpretations of the law seem to have been made for those candidates who lived outside the seven-mile limit of London, and many women from the regions around Norwich and Canterbury and the south of England took advantage of it. For instance: Elizabeth Rose, in 1684, obtained a surgeon's license in the diocese of Chichester; in

¹ The translation reads:

*"Woodhouse, Eleanor
Licence to practise
Surgery.*

GEORGE, by divine
providence, Archbishop
of Canterbury,
Primate and

Metropolitan of all England, to our beloved in Christ Eleanor Woodhouse, wife of Robert Woodhouse, Vintner, of the parish of St. Leonard's in Shore-ditch, in the County of Middlesex in the diocese of London of our province of Canterbury, Greetings and Grace. Whereas we have learned from trustworthy report that you have been occupied in the art and faculty of Surgery for no little time and (with the help of Almighty God) have helped many who were truly despairing of their safety and health of body and have cured the same and have been worthily commended in the aforesaid art of Surgery by the praiseworthy testimony of many skilled men for your experience fidelity and industry in connection with the cures which you have undertaken to perform in this art of Surgery. We therefore admit and approve you as far as is allowed to us by the Statute of this realm of England and not otherwise, nor in any other way, to practise and exercise the art of Surgery in and through the county of Middlesex, outside the City of London, and also the counties of Essex, Surrey and Sussex of our province of Canterbury for the reasons aforesaid and others which justly influence us in this matter (an oath having first been sworn by you concerning the recognition of the King's supreme power in causes ecclesiastical and temporal, and concerning the renunciation, recusation and refutation of all and every kind of foreign jurisdiction, power, authority, and superiority, according to the force, form and effect, of the Statute of Parliament of this famous realm of England enacted and provided in this matter): And by the tenor of these presents, we graciously concede and grant to you our licence and faculty in this subject as long as you conduct yourself praiseworthy and well. In testimony whereof we have caused to be affixed to these presents the seal which we use in this matter. Given on the twenty-sixth day of the month of January of the year of Our Lord according to the computation of the Church of England One thousand six hundred and thirteen, and in the third year of our translation.

The twenty-eighth day of the month of January in the year of Our Lord according &c. 1613, before Master Thomas Ridley, doctor of laws Vicar-General in Spirituals, &c., of the most Reverend Father George Lord Archbishop of Canterbury &c., in his chamber below the Hospice of the Lords Advocate, &c., in the presence of John Drake, public notary &c."

1687 Mary Ross of Portsmouth, and Elizabeth Wheatland of Winchester, and her husband, were licensed under the signature of the Archbishop of Canterbury.

In 1662 William Silke was also registered as a surgeon, while his wife was registered as a midwife, his license having cost thirteen shillings and sixpence, hers eighteen shillings and sixpence. Hannah Bing, in 1694, and Rebecca Goodrich, in 1662, and Mrs. Slap, of Deal, were "testified to" as competent midwives by several registered women, seven in one case, eighteen in another.

In 1719 Lia Smartfood's license as a midwife cost only three shillings and fourpence, while, in 1738, Elizabeth Chapman of Rochester paid ten pounds, and Mary Towne, of Peterborough, in 1714, paid eight guineas for the same privilege. In 1734 Mary Hunt, of a diocese in Worcester, was licensed as a surgeon, her fee not being stated.

The midwife's oath, like the Oath of Hippocrates, was long and very inclusive, and some of the women were permitted to baptize infants. Eleanor Preade, in 1567, for example, was given this privilege.

Impostors were punished in various ways. In 1586 the Bishop of Westfaling, in Hereford, ordered a search for unlicensed men and women practitioners. Extensive searches were made for evidence of witchcraft among unlicensed practitioners, Bishop Overton in Lichfield being a strong heresy hunter. Among others punished were Susanna Newman of Cheltenham, in 1677, and Mrs. Brooke, in 1661, who were excommunicated as midwives, although Mrs. Brooke was reinstated after an examination and the payment of a fee.

Unfortunately, as Mr. Haggis suggests, the Guild of Physicians, like other Guilds, deteriorated, and by the end of the sixteenth century Sir Francis Bacon called them all "fraternities of evil." The statutes were never repealed, however, although superseded in 1856 by one excluding women from registration unless they were graduates from some recognized foreign university. Hence the agitation of English women in the sixties and seventies for permission to study and practice in London and the Provinces, an agitation which was kept alive until 1876, when the registers were again opened to them. The only reason for the oversight and non-enforcement of the Act of 1511 was the carelessness of the men and women concerned, and their lack of information of the whole subject.

K. C. H.-M.

September 15, 1937

Errata

PAGE

- 47—Line 11, "Mahaffy," not "Mahaff"
- 102—Note 1, "Gallancz" should be "Gollancz"
- 137—Note 1, line 3, for "cocpulsā" read "compulsā"
Note 4, line 2, for "parientum" read "pariente"
- 138—Note 1, line 16, for "enin" read "enim"
- 140—Note 2, line 4, for "Patrioo" read "Patrio"
- 153—Paragraph 2, line 3, for "hygiencie" read "hygiene"
- 172—Paragraph 2, line 1, after "Muslim" insert "women"
- 180—Note 3, line 1, for "Historie" read "Historiæ"
- 189—Paragraph 2, line 3, for "disease" read "diseases"
- 190—Paragraph 2, last line, for "treate" read "treat"
- 197—Paragraph 4, line 4, for "a wound and heals a knight" read "the wound and heals the knight"
- 198—Line 1, after "to" insert "the"
- 202—Last two lines should be omitted
- 213—Note 3, third line from end, for "crowded" read "crowned"
- 215—Paragraph 1, line 9, for "recording" read "recorded"
- 221—Note 2, line 3, for "Marbury" read "Marburg"
- 223—Paragraph 1, line 17, before "queen" insert "German"
- 227—Section V, paragraph 2, two lines are omitted. Paragraph should read:
"The significant thing for us in these old romances is that we find among them many who seemed to be able, in a way that their auditors evidently took as a matter of course, to perform daring operations, heal infected wounds, prepare sleeping potions, and administer antidotes to poisons. The ladies of the times..."
- 236—Note 1, line 2, for "tempe" read "tempo"
- 256—Paragraph 2, line 4, for "when" read "where"
- 279—Line 2, for "1374" read "1347"
- 283—Line 15, for "sewed" read "closed"
- 337—See Addendum for medical registration
- 363—Paragraph 1, line 4, for "those" read "that"
- 364—Paragraph 1, line 1, for "Raynold" read "Raynald"

- 360—Paragraph 1, line 6, should read “anatomist or gynecologist”
370—Line 10, for “hsow” read “show”
385—Line 2, for “Spencer” read “Spenser”
430—Last line, for “Lievers” read “Lievens”
438—Next to last line, for “picturesuqe” read “picturesque”

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